

COMPUTER WORLD

THE NEWSWEEKLY FOR THE COMPUTER COMMUNITY

Weekly Newspaper - Second-class postage paid at Chicago, Illinois

Vol. V No. 22

June 2, 1971

\$9/year

IBM Cuts 360 and 370 Peripheral Prices 15%

By Frank Piasta
C.W. Staff Writer

WHITE PLAINS, N.Y. - An immediate across-the-board price cut of 15% on all 360 and 370 tape drives, disk drives, and printers was announced by IBM last week.

In addition, new fixed-term lease plans of 12- and 24-months will be available to current and future users at savings of 8% and 16% respectively.

Equipment affected includes the 1403 printer; 2311, 2314, and 2319 disk drives; 2401, 2415, and 2420 tape drives;

and the yet-to-be delivered 3420 tape drive, 3211 printer, and 3330 disk drive. Controllers for these units will also be offered at the new rates.

S/3 and S/7 Not Included

IBM peripherals not included are those for the System/3, and System/7, the 7330 tape drive, and 1404 printer. Also excluded are older peripherals currently in use but no longer available, IBM said.

Terminals, CRTs and other units are not affected.

The user will have an option to extend

the fixed-term leases an indefinite number of times at the 12- and 24-month terms, and once for a lesser period. Penalties for cancellation of the contract call for a payment of 2-1/2 times the monthly rental on 12-month contracts and five times the monthly rental on 24-month contracts, or the remaining amount due, whichever is less.

The current month-to-month leases, with 30-day cancellation privileges will continue to be offered to those customers that do not wish to sign up for the new longer leases, IBM said.

In addition to the new plans, the current option-to-purchase which applies rentals paid toward purchase price will be available.

135 Printer Adapter

An integrated printer adapter that allows the connection of the 1403 printer to the 370/135 without the need for a separate control unit was also announced by IBM.

The adapter will rent for \$360/mo and sell for \$17,785. It will be delivered in the fourth quarter of 1971, IBM said.



Quantor 100n COM Recorder



3M Microdisc System I



Rand COM Model 500 Recorder

12,000 Attend

COM's the Word at NMA Show

By a C.W. Staff Writer
WASHINGTON, D.C. - New computer output microfilm (COM) products dominated the National Microfilm Association (NMA) annual convention here last week. The week-long meeting attracted the NMA's largest attendance to date (12,000), nearly 50% higher than the 1970 convention.

Some 119 exhibitors displayed

COM-related products at the convention which had "Informatronics Update" as its theme. In addition to the record attendance, the NMA said it now has 5,000 members, described as a 72.3% increase in the past year. Quantor displayed an on-line COM system which it described as the lowest cost on-line unit available. The 3M Co., Kodak and Remington Rand all showed new microform handling equipment.

In addition, 3M announced a network of COM service centers and Kodak said it will adopt NMA recommendation to describe COM equipment in metric terms.

Quantor described its low cost COM system as the "Polaroid camera of the COM industry." The 100n priced at \$29,995 is \$15,000 below any other COM recorder available, Quantor claimed. The 100n can record and develop computer output onto microfilm in one fully automated operation.

The unit contains the company's proprietary film developer.

(Continued on Page 4)

Unanimous FCC Vote OKs Carriers' Entry

C.W. Washington Bureau
WASHINGTON, D.C. - The Federal Communications Commission last week approved unlimited entry of new carriers into the specialized (microwave) common carrier field.

The FCC is now expected to consider site applications from 13 separate firms which plan to provide low-cost communications facilities to computer data users.

The decision, which in effect ended virtual monopoly in microwave services for established carriers such as AT&T and Western Union, was approved by the FCC in a unanimous 7-0 vote.

The next step, according to Bernard Strassburg, chief of the FCC's Common Carrier Bureau, will be to process the applications on a "one-by-one basis. We're going to start to do that very promptly," he said. Strassburg added that the first construction permits will be issued within several weeks to a

month, but that some applications may have to be amended or modified on the basis of rules laid down in the decision.

An FCC staff spokesman told CW that in most cases each system application will be considered in the order in which filed with the commission. An exception will be the application of Data Transmission Co. (Datran) for a nationwide switched network. It apparently will be considered separately.

In addition, in areas where several systems are proposed to service the same route, these will probably be considered jointly by the commission, the spokesman said.

The major points yet to be resolved include assurance that proposed transmissions will not interfere with existing microwave routes operated by AT&T and other carriers; and sufficient evidence that individual applicants have the technical and economic capability to operate

(Continued on Page 3)

Here's a Faster, Cheaper 360/20

By Frank Piasta

C.W. Staff Writer
WHITE PLAINS, N.Y. - Continuing the trend began with the 360/22 of offering reconditioned CPU models at lower prices in "new" versions, IBM's new 360/20-6 offers performance at nearly the level of the 20-5 for about two-thirds the price.

The JVO equipment which has a cycle time of 1.8 μ sec/2 byte compared with the 2 μ sec/2 byte time of the 20-5. The 20-6 affords a more limited choice of memory sizes than the 20-5, with only 8K, 12K, and 16K models announced. The 20-5 is the only model of the 360/20 currently being sold as new equipment, and has additional 24K and 32K memory size options.

The JVO equipment which can be attached to the new 20-6 is more limited than that offered with the 20-5. The Native Tape Attachment with its 2401 tape drives cannot be used with the 20-6. Magnetic tape requirements are handled by up to six 2415 drives.

The disk storage capacity of the 20-6 is half that

of the 20-5. Two 2311 disk drives can be attached to the 20-6, compared with four on the 20-5.

Another significant discrepancy in capability between the models, according to IBM, is the unavailability of the 1401/1440 compatibility feature on the 20-6.

The 20-6, IBM said, is a version of the 360/20 series which includes "reconditioned major elements." New components will be used where necessary, IBM added.

The CPU rental prices for the 20-6 are \$575/mo for the 8K model, \$800/mo for the 12K model and \$1,000/mo for the 16K version. Prices for the corresponding 20-5s are \$875/mo, \$1,125/mo, and \$1,375/mo. Purchase prices are \$19,550, \$27,600, and \$40,000 respectively for the new 20-6s, including a typical configuration of the 20-6, including a 12K CPU, 2360 Multi-Function Card Machine, 2203 printer, and two 2311 disk drives with controller; rents for \$3,375/mo with a purchase price of \$139,480. Customer shipments will begin "in five months," IBM said.

On the Inside

Government DP Spending
Freeze Asked by Proxmire
- Page 2

Burroughs, IBM Tie
For Customer Loyalty

Page 23

Communications 16
Computer Industry 23
Editorial 8
Education 12
Financial 26
Societies 10
Software/Services 13
Systems/Peripherals 17

Perry Opposes Moratorium

Government DP Spending Freeze Asked by Proxmire

By Alan Drottel

CW Washington Bureau
WASHINGTON, D.C. — Sen. William Proxmire (D-Wis.) has said the "Federal Government should stop spending \$2 billion

to \$3 billion a year on computers until it is known how well it uses the computers it has."

Proxmire, chairman of the Joint Economic Committee and of its Subcommittee on Prior-

ities and Economy in Government, made the statement in issuing a subcommittee report, "Economy in Government: Automatic Data Processing Equipment." The report is based

on hearings the subcommittee held last July 1.

Sen. Charles H. Percy (R-Ill.), a member of the subcommittee, filed a supplemental view, indicating that while he agreed with the "thrust" of the report he believes that certain parts of it "raise more questions than they answer."

Specific recommendations made by the subcommittee include:

- The Office of Management and Budget, the Secretary of Defense and the appropriations committees of the Congress should consider a moratorium on further procurement of ADP systems until it is determined that the existing federal ADP inventory (which will total about 5,400 computers by June 30) "is being efficiently and properly utilized."

- OMB should require utilization and cost reporting for all government-owned and leased ADP equipment. "Every effort should be made to minimize the use of special categories, such as those now used for defense,

space and communications in the management of government ADP. Under present practices these categories work against coordinated management."

- The General Services Administration "should improve its ADP management information system... [and] should require that federal agencies make every effort to replace more expensive ADP system components with less expensive, compatible equipment available plug-to-plug from other sources."

- The National Bureau of Standards should "accelerate its efforts... to standardize the interface media between peripheral equipment and the central processing units of ADP equipment."

Percy, in his statement, said the fact that weapons system may have had overruns does not mean that computers are unreliable or caused the overruns. He said that he finds a moratorium on the purchase of equipment "a very strange recommendation." He said it is not very practical to implement.

Accomplishments of Brooks Bill Cited, Agencies Urge More Implementation

CW Washington Bureau
WASHINGTON, D.C. — Citing problems typical of a major computer user, the agency triumvirate that oversees the Federal Government's ADP told the House Government Activities Subcommittee that a great deal remains to be done in effectively implementing the Brooks Bill.

Specifically mentioned were problems concerning the emergence of companies supplying system-compatible peripherals, standardization and software.

The Brooks Bill established the pattern and profile of the Federal Government's ADP operation.

Representatives of the three agencies — the Office of Management and Budget (OMB), the General Services Administration (GSA) and the National Bureau

of Standards (NBS) — also cited accomplishments in implementing the five-year-old Brooks Bill, known as P.L. 89-306.

Said Robert L. Kunzig, GSA administrator, "P.L. 89-306 has enabled GSA alone to achieve overall reduced costs of approximately \$1.1 billion" — in hardware procurement (\$339.6 million), procurement of magnetic tape and other supplies (\$92.6 million), reutilization of government-owned equipment (\$448.8 million) and sharing of government-owned or leased resources (\$250.8 million).

Subcommittee Chairman Rep. Jack Brooks (D-Texas), author of the ADP bill, said in an opening statement that "as the world's largest user of computers, we must, in a responsible manner, fulfill our mandate to

the taxpayers to manage this costly equipment efficiently and effectively."

Dwight J. Ink, assistant director of OMB, said that one of the most important developments within the computer industry, the emergence of independent peripheral suppliers, has presented the government with opportunities "in the form of lower prices and higher quality products."

At the same time, it has presented some serious managerial problems "in the sense that it shifts the burden of responsibility to the customer for assuring that the total system will interact properly and efficiently" and that it also complicates the selection and procurement process because of the alternatives now available.

According to Ink, the Government, according to Ink, has already reduced rental costs by more than \$19 million by using equipment supplied by peripheral manufacturers.

Ink added that another issue is the increasingly greater impact that software is having upon computer management, particularly because of its complexity and cost.

"The opportunity," he declared, "we now have of acquiring software from a wide range of suppliers, while salutary in one respect, places a difficult burden on the customer in evaluating the relative merits of a vast array of products."

Faulty DP Policies Hit by Brooks

WASHINGTON, D.C. — "The nation's economic and military leadership can be endangered by faulty computer policies," Rep. Jack Brooks (D-Texas) declared following hearings on computer management and use in the Federal Government.

"The U.S.," Brooks explained, "is the world's leader in computer technology and use. Broad segments of our economy and most of the nation's new weapons systems rely upon computers. Furthermore, computer techniques offer vast potential in the solution of many of the extremely difficult social problems presently confronting the nation."

"If the nation loses its leader-

ship in computer technology — if we become a second-rate computer power — we will become a second-rate nation, both economically and militarily," Brooks continued. "Yet, despite the vital importance of computers to our society, there is no effective policymaking structure in the Federal Government to guide the nation in the optimum exploitation of these techniques."

"It is essential that the nation's finest computer talent, as well as experts in other fields, be brought to bear in working out effective computer policies for the nation as a whole," he stated.

Data Banks on Firms Urged

WASHINGTON, D.C. — Computers in which the Defense Department stores data on civilians "need to be declared surplus, and put to use by civilian agencies" to collect information upon which "meaningful law enforcement in the corporate sector can be based," according to Sen. Lee Metcalf (D-Mont.).

"No one knows who owns America," Metcalf announced. He said government methods of data collection on corporate ownership, and on holding companies which "control" large corporations, are "primitive."

Thus, the administration is "notably weak" in law enforcement in the corporate sector, especially in the areas of rate control, antitrust items, pollution, and equal opportunity requirements.

There's more to a computer room than the hardware, the software, and the people.



That "More" will be covered by Computerworld in the June 30th issue in the Accessories, Environment, and Security Supplement.

- Accessories — The magnetic tape, the disk packs, the continuous forms and envelopes, and the cards.
- Environment — The power supply & back up equipment, the air conditioning, the desks, filing racks, tape seals.
- Security — Data safes, guard systems, data integrity.

If you've felt that your "More" is too often overlooked — this supplement is your opportunity to advertise directly to over 20,000 computer rooms — and do it in an exclusive "More" atmosphere. Advertising forms close Wednesday, June 16th. For rates, production information, contact Dorothy Travis at Computerworld (617) 332-5606 — or the Computerworld Representative nearest you —

ask for the 'MORE' Supplement.

High Court Refuses to Hear Case on Dossier Access

By Joseph Hanlon
Civ Staff Writer

WASHINGTON, D.C. — The U.S. Supreme Court last week refused to hear a case on the right of a citizen to see a secret government record about him or to challenge their accuracy.

The court voted 7-2 against hearing the case but gave no reason. Mrs. Catherine

Tarver of Seattle, Wash., raised the issue with the aid of the American Civil Liberties Union.

Unfit Mother?

In 1967 Mrs. Tarver was receiving assistance under Aid to Dependent Children. Her caseworker wrote a report saying she was an unfit mother, and recommend-

ing Juvenile Court action to take away her three children. The Juvenile Court refused to do so.

According to Michael H. Rosen, executive director of the Washington ACLU, neither Mrs. Tarver nor her lawyer have ever seen the report. But another social worker told Mrs. Tarver that the report contained false information about her, Rosen said.

The report remains in the files of the Washington State Department of Public Assistance (DPA). Rosen continued, where it can be seen by other state agencies. Mrs. Tarver asked the DPA for a hearing on the contents of the file. The DPA refused, and Mrs. Tarver took the case to court.

The Washington State Supreme Court ruled against her May 28, 1970. It ruled only on the narrow grounds of the hearing law itself — that hearings can only be held on issues relating to money — and ignored the constitutional issue, Rosen

explained.

Four members of the U.S. Supreme Court must express interest in a case before the full court will hear it. Only Justices William O. Douglas and William J. Brennan wanted to hear this case.

Douglas noted that Mrs. Tarver apparently "has no rights to a hearing to correct the reports even if they are false. And it appears that petitioner [Mrs. Tarver] will never be informed prior to transmittal of her file to various authorized groups."

Douglas argued that the case should be heard because it presented "an important question of procedural due process" under the Fourteenth Amendment.

The U.S. Supreme Court's refusal to hear the case means that the state ruling remains in force and gives at least some national standing to the ruling. The ruling does not, however, have the force it would have if it had actually been upheld by the U.S. Supreme Court.

Unanimous FCC Decision Assures Unlimited Entry of New Carriers

(Continued from Page 1)

their planned systems. In its decision, the FCC cited advantages to the public by permitting entry of new specialized carriers, and it added that these companies are not anticipated to have an adverse impact "on service to the public by existing carriers."

In addition, the commission stressed that the existing carriers will be permitted to compete "fairly and fully" in the sale of specialized services "and that its rate-making and regulatory policies and practices will be adapted to accomplish this objective."

Where services are in direct competition, the commission said, "departure by existing carriers from uniform nationwide pricing practices may be in order and in such circumstances will not be opposed" by the FCC.

FCC Chairman Dean Burch said: "We would not allow an existing carrier to take money from its monopoly business and plug it into the specialized field."

A spokesman for Microwave Communications, Inc. (MCI) told CW that the firm would probably concentrate on the eastern links in its network first. Initially, the MCI Chicago-to-St. Louis link, which has already been approved by the FCC and will begin operating in June, will be interconnected with the East Coast via the MCI New York-West link from Chicago to New York.

One of the first filings, from Interdata Corp., is part of the MCI network and will provide service between New York and Washington, D.C. This portion would connect with New England and Mid-Atlantic links to provide initial service in "about a year" to the populous Northeast section of the country, the spokesman

DP Centers Should Have Own On-Site Electric Utilities

CHICAGO — Computer centers are good candidates for on-site electric utilities because of their "precise power" requirements, according to the head of a leading "third party" energy company.

W.J. Weaver, president of Ohio Energy Systems, Inc. (OES), said special equipment to protect against power fluctuations and outages often costs more than total energy systems, if the detection or prevention gear is installed separately. The total cost of this special equipment, plus design and installation charges, will often exceed cost of an on-site utility, "at least for a large computer center," Weaver

stated at a recent meeting of the American Gas Association here. The Internal Revenue Service computer center under construction in Brookhaven, N.Y., will have such a facility, Weaver reported. OES also helped develop an on-site power facility for the Columbia Gas System Service Corp., in Columbia, Ohio.

"Third party" electric companies combine the services of the normal utilities with those of consulting engineers, equipment vendors, contractors, maintenance engineers and, in some cases, financial entities, an OES official explained.

said. In contrast to MCI's link-by-link operation, the proposed Datran network will go into operation all at once. A Datran spokesman told CW that the initial net serving 35 cities is expected to begin service in 1974.

MetaCOBOL delivers what COBOL only promises.

In 1960 ADR participated in building the industry's first Cobol Compiler. In 1970, after observing programmers struggle with Cobol's shortcomings for 10 years, ADR introduced MetaCOBOL. The software designed to make Cobol's decade-old promises finally came true: MetaCOBOL is the most comprehensive and easy-to-use Cobol system available today.

FACT 1

CODING

When writing Cobol programs, MetaCOBOL has the most comprehensive Cobol macro facility available. One that provides: complete freedom to produce your own verbs (macros) and abbreviations; ADR-supplied macros including new Cobol verbs, abbreviations, analysis macros, plus Decision Table macros and Report Generator macros; and many more features.

FACT 2

TESTING

When preparing test data, MetaCOBOL provides comprehensive data with a minimum of programmer effort. MetaCOBOL also performs Syntax Checking and can generate JCL statements.

FACT 3

STANDARDIZATION

MetaCOBOL lets you establish and enforce your Cobol implementation and installation standards.

Get the whole story about overcoming Cobol's shortcomings with MetaCOBOL. And find out how MetaCOBOL can bring immediate user benefit to your Cobol installation. MetaCOBOL is now available on a month-to-month basis, as well as on a permanent license. MetaCOBOL delivers what Cobol only promises. Call on ADR office today. Write in MetaCOBOL tomorrow.



APPLIED DATA RESEARCH THE SOFTWARE BUILDERS

Call your nearest ADR office:

Atlanta 404-223-3087/Boston 617-945-9540/Chicago 312-977-4247/Cincinnati 513-531-3040/Cleveland 216-321-1608/Dallas 214-628-3900/Denver 303-749-7777/Hartford 203-443-1971/Houston 713-536-3188/Los Angeles 310-913-5772/Los Angeles 310-913-5772/Memphis 615-253-4050/New York 212-784-0550/Philadelphia 215-525-2088/Pittsburgh 412-391-3439/Rochester 716-481-0000/San Francisco 415-581-4700/Sao Paulo 809-754-0044/Seattle 206-462-3244/Toronto 416-462-2170/Washington 703-534-1982/Youngstown 513-763-3636/Other offices: 11-PA-0010/11-PA-0011/11-PA-0012/11-PA-0013/11-PA-0014/11-PA-0015/11-PA-0016/11-PA-0017/11-PA-0018/11-PA-0019/11-PA-0020/11-PA-0021/11-PA-0022/11-PA-0023/11-PA-0024/11-PA-0025/11-PA-0026/11-PA-0027/11-PA-0028/11-PA-0029/11-PA-0030/11-PA-0031/11-PA-0032/11-PA-0033/11-PA-0034/11-PA-0035/11-PA-0036/11-PA-0037/11-PA-0038/11-PA-0039/11-PA-0040/11-PA-0041/11-PA-0042/11-PA-0043/11-PA-0044/11-PA-0045/11-PA-0046/11-PA-0047/11-PA-0048/11-PA-0049/11-PA-0050/11-PA-0051/11-PA-0052/11-PA-0053/11-PA-0054/11-PA-0055/11-PA-0056/11-PA-0057/11-PA-0058/11-PA-0059/11-PA-0060/11-PA-0061/11-PA-0062/11-PA-0063/11-PA-0064/11-PA-0065/11-PA-0066/11-PA-0067/11-PA-0068/11-PA-0069/11-PA-0070/11-PA-0071/11-PA-0072/11-PA-0073/11-PA-0074/11-PA-0075/11-PA-0076/11-PA-0077/11-PA-0078/11-PA-0079/11-PA-0080/11-PA-0081/11-PA-0082/11-PA-0083/11-PA-0084/11-PA-0085/11-PA-0086/11-PA-0087/11-PA-0088/11-PA-0089/11-PA-0090/11-PA-0091/11-PA-0092/11-PA-0093/11-PA-0094/11-PA-0095/11-PA-0096/11-PA-0097/11-PA-0098/11-PA-0099/11-PA-0100/11-PA-0101/11-PA-0102/11-PA-0103/11-PA-0104/11-PA-0105/11-PA-0106/11-PA-0107/11-PA-0108/11-PA-0109/11-PA-0110/11-PA-0111/11-PA-0112/11-PA-0113/11-PA-0114/11-PA-0115/11-PA-0116/11-PA-0117/11-PA-0118/11-PA-0119/11-PA-0120/11-PA-0121/11-PA-0122/11-PA-0123/11-PA-0124/11-PA-0125/11-PA-0126/11-PA-0127/11-PA-0128/11-PA-0129/11-PA-0130/11-PA-0131/11-PA-0132/11-PA-0133/11-PA-0134/11-PA-0135/11-PA-0136/11-PA-0137/11-PA-0138/11-PA-0139/11-PA-0140/11-PA-0141/11-PA-0142/11-PA-0143/11-PA-0144/11-PA-0145/11-PA-0146/11-PA-0147/11-PA-0148/11-PA-0149/11-PA-0150/11-PA-0151/11-PA-0152/11-PA-0153/11-PA-0154/11-PA-0155/11-PA-0156/11-PA-0157/11-PA-0158/11-PA-0159/11-PA-0160/11-PA-0161/11-PA-0162/11-PA-0163/11-PA-0164/11-PA-0165/11-PA-0166/11-PA-0167/11-PA-0168/11-PA-0169/11-PA-0170/11-PA-0171/11-PA-0172/11-PA-0173/11-PA-0174/11-PA-0175/11-PA-0176/11-PA-0177/11-PA-0178/11-PA-0179/11-PA-0180/11-PA-0181/11-PA-0182/11-PA-0183/11-PA-0184/11-PA-0185/11-PA-0186/11-PA-0187/11-PA-0188/11-PA-0189/11-PA-0190/11-PA-0191/11-PA-0192/11-PA-0193/11-PA-0194/11-PA-0195/11-PA-0196/11-PA-0197/11-PA-0198/11-PA-0199/11-PA-0200/11-PA-0201/11-PA-0202/11-PA-0203/11-PA-0204/11-PA-0205/11-PA-0206/11-PA-0207/11-PA-0208/11-PA-0209/11-PA-0210/11-PA-0211/11-PA-0212/11-PA-0213/11-PA-0214/11-PA-0215/11-PA-0216/11-PA-0217/11-PA-0218/11-PA-0219/11-PA-0220/11-PA-0221/11-PA-0222/11-PA-0223/11-PA-0224/11-PA-0225/11-PA-0226/11-PA-0227/11-PA-0228/11-PA-0229/11-PA-0230/11-PA-0231/11-PA-0232/11-PA-0233/11-PA-0234/11-PA-0235/11-PA-0236/11-PA-0237/11-PA-0238/11-PA-0239/11-PA-0240/11-PA-0241/11-PA-0242/11-PA-0243/11-PA-0244/11-PA-0245/11-PA-0246/11-PA-0247/11-PA-0248/11-PA-0249/11-PA-0250/11-PA-0251/11-PA-0252/11-PA-0253/11-PA-0254/11-PA-0255/11-PA-0256/11-PA-0257/11-PA-0258/11-PA-0259/11-PA-0260/11-PA-0261/11-PA-0262/11-PA-0263/11-PA-0264/11-PA-0265/11-PA-0266/11-PA-0267/11-PA-0268/11-PA-0269/11-PA-0270/11-PA-0271/11-PA-0272/11-PA-0273/11-PA-0274/11-PA-0275/11-PA-0276/11-PA-0277/11-PA-0278/11-PA-0279/11-PA-0280/11-PA-0281/11-PA-0282/11-PA-0283/11-PA-0284/11-PA-0285/11-PA-0286/11-PA-0287/11-PA-0288/11-PA-0289/11-PA-0290/11-PA-0291/11-PA-0292/11-PA-0293/11-PA-0294/11-PA-0295/11-PA-0296/11-PA-0297/11-PA-0298/11-PA-0299/11-PA-0300/11-PA-0301/11-PA-0302/11-PA-0303/11-PA-0304/11-PA-0305/11-PA-0306/11-PA-0307/11-PA-0308/11-PA-0309/11-PA-0310/11-PA-0311/11-PA-0312/11-PA-0313/11-PA-0314/11-PA-0315/11-PA-0316/11-PA-0317/11-PA-0318/11-PA-0319/11-PA-0320/11-PA-0321/11-PA-0322/11-PA-0323/11-PA-0324/11-PA-0325/11-PA-0326/11-PA-0327/11-PA-0328/11-PA-0329/11-PA-0330/11-PA-0331/11-PA-0332/11-PA-0333/11-PA-0334/11-PA-0335/11-PA-0336/11-PA-0337/11-PA-0338/11-PA-0339/11-PA-0340/11-PA-0341/11-PA-0342/11-PA-0343/11-PA-0344/11-PA-0345/11-PA-0346/11-PA-0347/11-PA-0348/11-PA-0349/11-PA-0350/11-PA-0351/11-PA-0352/11-PA-0353/11-PA-0354/11-PA-0355/11-PA-0356/11-PA-0357/11-PA-0358/11-PA-0359/11-PA-0360/11-PA-0361/11-PA-0362/11-PA-0363/11-PA-0364/11-PA-0365/11-PA-0366/11-PA-0367/11-PA-0368/11-PA-0369/11-PA-0370/11-PA-0371/11-PA-0372/11-PA-0373/11-PA-0374/11-PA-0375/11-PA-0376/11-PA-0377/11-PA-0378/11-PA-0379/11-PA-0380/11-PA-0381/11-PA-0382/11-PA-0383/11-PA-0384/11-PA-0385/11-PA-0386/11-PA-0387/11-PA-0388/11-PA-0389/11-PA-0390/11-PA-0391/11-PA-0392/11-PA-0393/11-PA-0394/11-PA-0395/11-PA-0396/11-PA-0397/11-PA-0398/11-PA-0399/11-PA-0400/11-PA-0401/11-PA-0402/11-PA-0403/11-PA-0404/11-PA-0405/11-PA-0406/11-PA-0407/11-PA-0408/11-PA-0409/11-PA-0410/11-PA-0411/11-PA-0412/11-PA-0413/11-PA-0414/11-PA-0415/11-PA-0416/11-PA-0417/11-PA-0418/11-PA-0419/11-PA-0420/11-PA-0421/11-PA-0422/11-PA-0423/11-PA-0424/11-PA-0425/11-PA-0426/11-PA-0427/11-PA-0428/11-PA-0429/11-PA-0430/11-PA-0431/11-PA-0432/11-PA-0433/11-PA-0434/11-PA-0435/11-PA-0436/11-PA-0437/11-PA-0438/11-PA-0439/11-PA-0440/11-PA-0441/11-PA-0442/11-PA-0443/11-PA-0444/11-PA-0445/11-PA-0446/11-PA-0447/11-PA-0448/11-PA-0449/11-PA-0450/11-PA-0451/11-PA-0452/11-PA-0453/11-PA-0454/11-PA-0455/11-PA-0456/11-PA-0457/11-PA-0458/11-PA-0459/11-PA-0460/11-PA-0461/11-PA-0462/11-PA-0463/11-PA-0464/11-PA-0465/11-PA-0466/11-PA-0467/11-PA-0468/11-PA-0469/11-PA-0470/11-PA-0471/11-PA-0472/11-PA-0473/11-PA-0474/11-PA-0475/11-PA-0476/11-PA-0477/11-PA-0478/11-PA-0479/11-PA-0480/11-PA-0481/11-PA-0482/11-PA-0483/11-PA-0484/11-PA-0485/11-PA-0486/11-PA-0487/11-PA-0488/11-PA-0489/11-PA-0490/11-PA-0491/11-PA-0492/11-PA-0493/11-PA-0494/11-PA-0495/11-PA-0496/11-PA-0497/11-PA-0498/11-PA-0499/11-PA-0500/11-PA-0501/11-PA-0502/11-PA-0503/11-PA-0504/11-PA-0505/11-PA-0506/11-PA-0507/11-PA-0508/11-PA-0509/11-PA-0510/11-PA-0511/11-PA-0512/11-PA-0513/11-PA-0514/11-PA-0515/11-PA-0516/11-PA-0517/11-PA-0518/11-PA-0519/11-PA-0520/11-PA-0521/11-PA-0522/11-PA-0523/11-PA-0524/11-PA-0525/11-PA-0526/11-PA-0527/11-PA-0528/11-PA-0529/11-PA-0530/11-PA-0531/11-PA-0532/11-PA-0533/11-PA-0534/11-PA-0535/11-PA-0536/11-PA-0537/11-PA-0538/11-PA-0539/11-PA-0540/11-PA-0541/11-PA-0542/11-PA-0543/11-PA-0544/11-PA-0545/11-PA-0546/11-PA-0547/11-PA-0548/11-PA-0549/11-PA-0550/11-PA-0551/11-PA-0552/11-PA-0553/11-PA-0554/11-PA-0555/11-PA-0556/11-PA-0557/11-PA-0558/11-PA-0559/11-PA-0560/11-PA-0561/11-PA-0562/11-PA-0563/11-PA-0564/11-PA-0565/11-PA-0566/11-PA-0567/11-PA-0568/11-PA-0569/11-PA-0570/11-PA-0571/11-PA-0572/11-PA-0573/11-PA-0574/11-PA-0575/11-PA-0576/11-PA-0577/11-PA-0578/11-PA-0579/11-PA-0580/11-PA-0581/11-PA-0582/11-PA-0583/11-PA-0584/11-PA-0585/11-PA-0586/11-PA-0587/11-PA-0588/11-PA-0589/11-PA-0590/11-PA-0591/11-PA-0592/11-PA-0593/11-PA-0594/11-PA-0595/11-PA-0596/11-PA-0597/11-PA-0598/11-PA-0599/11-PA-0600/11-PA-0601/11-PA-0602/11-PA-0603/11-PA-0604/11-PA-0605/11-PA-0606/11-PA-0607/11-PA-0608/11-PA-0609/11-PA-0610/11-PA-0611/11-PA-0612/11-PA-0613/11-PA-0614/11-PA-0615/11-PA-0616/11-PA-0617/11-PA-0618/11-PA-0619/11-PA-0620/11-PA-0621/11-PA-0622/11-PA-0623/11-PA-0624/11-PA-0625/11-PA-0626/11-PA-0627/11-PA-0628/11-PA-0629/11-PA-0630/11-PA-0631/11-PA-0632/11-PA-0633/11-PA-0634/11-PA-0635/11-PA-0636/11-PA-0637/11-PA-0638/11-PA-0639/11-PA-0640/11-PA-0641/11-PA-0642/11-PA-0643/11-PA-0644/11-PA-0645/11-PA-0646/11-PA-0647/11-PA-0648/11-PA-0649/11-PA-0650/11-PA-0651/11-PA-0652/11-PA-0653/11-PA-0654/11-PA-0655/11-PA-0656/11-PA-0657/11-PA-0658/11-PA-0659/11-PA-0660/11-PA-0661/11-PA-0662/11-PA-0663/11-PA-0664/11-PA-0665/11-PA-0666/11-PA-0667/11-PA-0668/11-PA-0669/11-PA-0670/11-PA-0671/11-PA-0672/11-PA-0673/11-PA-0674/11-PA-0675/11-PA-0676/11-PA-0677/11-PA-0678/11-PA-0679/11-PA-0680/11-PA-0681/11-PA-0682/11-PA-0683/11-PA-0684/11-PA-0685/11-PA-0686/11-PA-0687/11-PA-0688/11-PA-0689/11-PA-0690/11-PA-0691/11-PA-0692/11-PA-0693/11-PA-0694/11-PA-0695/11-PA-0696/11-PA-0697/11-PA-0698/11-PA-0699/11-PA-0700/11-PA-0701/11-PA-0702/11-PA-0703/11-PA-0704/11-PA-0705/11-PA-0706/11-PA-0707/11-PA-0708/11-PA-0709/11-PA-0710/11-PA-0711/11-PA-0712/11-PA-0713/11-PA-0714/11-PA-0715/11-PA-0716/11-PA-0717/11-PA-0718/11-PA-0719/11-PA-0720/11-PA-0721/11-PA-0722/11-PA-0723/11-PA-0724/11-PA-0725/11-PA-0726/11-PA-0727/11-PA-0728/11-PA-0729/11-PA-0730/11-PA-0731/11-PA-0732/11-PA-0733/11-PA-0734/11-PA-0735/11-PA-0736/11-PA-0737/11-PA-0738/11-PA-0739/11-PA-0740/11-PA-0741/11-PA-0742/11-PA-0743/11-PA-0744/11-PA-0745/11-PA-0746/11-PA-0747/11-PA-0748/11-PA-0749/11-PA-0750/11-PA-0751/11-PA-0752/11-PA-0753/11-PA-0754/11-PA-0755/11-PA-0756/11-PA-0757/11-PA-0758/11-PA-0759/11-PA-0760/11-PA-0761/11-PA-0762/11-PA-0763/11-PA-0764/11-PA-0765/11-PA-0766/11-PA-0767/11-PA-0768/11-PA-0769/11-PA-0770/11-PA-0771/11-PA-0772/11-PA-0773/11-PA-0774/11-PA-0775/11-PA-0776/11-PA-0777/11-PA-0778/11-PA-0779/11-PA-0780/11-PA-0781/11-PA-0782/11-PA-0783/11-PA-0784/11-PA-0785/11-PA-0786/11-PA-0787/11-PA-0788/11-PA-0789/11-PA-0790/11-PA-0791/11-PA-0792/11-PA-0793/11-PA-0794/11-PA-0795/11-PA-0796/11-PA-0797/11-PA-0798/11-PA-0799/11-PA-0800/11-PA-0801/11-PA-0802/11-PA-0803/11-PA-0804/11-PA-0805/11-PA-0806/11-PA-0807/11-PA-0808/11-PA-0809/11-PA-0810/11-PA-0811/11-PA-0812/11-PA-0813/11-PA-0814/11-PA-0815/11-PA-0816/11-PA-0817/11-PA-0818/11-PA-0819/11-PA-0820/11-PA-0821/11-PA-0822/11-PA-0823/11-PA-0824/11-PA-0825/11-PA-0826/11-PA-0827/11-PA-0828/11-PA-0829/11-PA-0830/11-PA-0831/11-PA-0832/11-PA-0833/11-PA-0834/11-PA-0835/11-PA-0836/11-PA-0837/11-PA-0838/11-PA-0839/11-PA-0840/11-PA-0841/11-PA-0842/11-PA-0843/11-PA-0844/11-PA-0845/11-PA-0846/11-PA-0847/11-PA-0848/11-PA-0849/11-PA-0850/11-PA-0851/11-PA-0852/11-PA-0853/11-PA-0854/11-PA-0855/11-PA-0856/11-PA-0857/11-PA-0858/11-PA-0859/11-PA-0860/11-PA-0861/11-PA-0862/11-PA-0863/11-PA-0864/11-PA-0865/11-PA-0866/11-PA-0867/11-PA-0868/11-PA-0869/11-PA-0870/11-PA-0871/11-PA-0872/11-PA-0873/11-PA-0874/11-PA-0875/11-PA-0876/11-PA-0877/11-PA-0878/11-PA-0879/11-PA-0880/11-PA-0881/11-PA-0882/11-PA-0883/11-PA-0884/11-PA-0885/11-PA-0886/11-PA-0887/11-PA-0888/11-PA-0

Flammarion Gets One Franc

French Publishing House Wins IBM Suit

CW European Bureau
PARIS—After a wordy and vituperative battle in the French courts, Flammarion, a French publishing company, scored only a moral victory in its claim for \$450,000 from IBM because its 360/20 failed to operate satisfactorily.

The award for damages was only one franc.

Flammarion claimed that IBM recommended an unsuitable computer configuration which severely disrupted the company's sales and distribution services. IBM's counterclaim maintained that the problems arose because of the incompetence of Flammarion's staff.

The case began in 1965 when IBM recommended that Flam-

marion use a 360/20 as the heart of its modernization plan, and stressed that it could easily be upgraded without the need for new systems and programming. It was expected that the processing of Flammarion's list of 5,000 titles and 9,000 customers would take seven to eight hours. In reality it involved 24 working hours, Flammarion claimed.

Flammarion requested IBM to carry out a further study, and IBM recommended a 360/25. This suggestion was acceptable provided a suitable cash indemnity was included. IBM's figure of \$13,500 was not acceptable and relations between the companies ended.

Flammarion then went to Siemens which supplied a 4004/35 with four tapes and

two disks.

IBM delivered a proposed a relatively small and thus inexpensive system in order to win its customer, fully realizing that this would be inadequate to handle the required volume of processing.

IBM said the original survey recommending the 360/20 was based on figures supplied by Flammarion. The start-up problems, claimed IBM, arose before the machine was installed, through programming - delays caused by Flammarion manager's failure to settle on definitive invoicing procedures. The application started up on schedule only after exceptional efforts on the part of IBM staff, IBM stated.

COM Products Dominate NMA Show

(Continued From Page 1)
oper which handles 100 feet of dry, ready-to-use microfilm in 12 minutes without human intervention.

The low cost of the 100n is credited to the use of lightweight diodes and permits the generation of a 7 by 10 matrix without the use of fiber optics. The 100n will lease for \$995/mo

from the Cupertino, Calif.,-based company.

The formation of a nationwide network of COM systems centers was announced by 3M. The centers, to be equipped with 3M's Series F Electron Beam Recorders (EBR) that use magnetic tape input, will be located at sites of users who will utilize the system to handle their own requirements.

First centers will be in Indianapolis and Denver, with units in New York/New Jersey, Dallas/Fort Worth, Chicago, and San Francisco scheduled for operation soon, the company said.

The Microdisc System I is said to be able to locate one document from a file of 414,000 frames within 45 seconds. Said for storage and retrieval of any alphabetically filed data, the system consists of a teletype writer, a magnetic disk memory for storing index data, and a 3M Page Search microfilm reader printer and will be priced from \$35,000 to \$50,000.

The 500 CR Reader and the 500 Page Search reader printer, which combines low cost rapid microfilm processing with the ability to make Dry-Silver prints without chemicals, toners or powder, was shown. The reader is priced at \$1,263 and the reader printer at \$6,075, both without lenses.

A cartridge microfilm camera

which adds the "Blips" needed by the Page Search units to microfilm images will be priced at \$3,125. It is designed to be used with the \$4,890 400 Page Search reader-printer.

Kodak introduced the Recordak Motomatic Reader Model MPG-TL and the Versamat Model 75 film processor.

The Versamat Model 75 delivers standard or reversal processed film in widths up to 105mm. The processor may be loaded in daylight and accepts cartridges for the Versafilm camera plus Vought 600 or Com-Pack magazines. A 200-ft roll may be processed at 10 f/min. The Versamat processor lists for \$11,500 and rents for \$375/mo.

Remington Rand Systems Division made two product announcements. The Rand COM Model 500 converts computer-generated data on magnetic tape to microfilm. The offline unit includes a tape drive, CRT, and camera. An interface circuit is available for various computers.

The 500 offers 73 available characters from which a 64-character set may be selected. The display is adjustable to square or rectangular format and can be changed from cine to comic orientation. Pages may be up to 80 lines deep, with 160 characters. The basic Rand COM Model 500 sells for \$45,000.

News Wrapup

26 U.S. Agencies Have Data Banks

ATLANTIC CITY—Twenty-six federal agencies have replied to Sen. Sam J. Ervin (D-N.C.) questionnaire, affirming they have data banks of personal information, according to Lawrence Barker, chief counsel of the Senate Constitutional Rights Subcommittee.

Barker cited one example, the Securities Exchange Commission (SEC), which now has a manual file on 538,000 people who have come under SEC jurisdiction. Furthermore, Barker said, the SEC is establishing a computer data bank of the stock holdings of 100,000 corporate insiders.

Interior OKs Master Plan for Data Center

WASHINGTON, D.C.—The U.S. Geological Survey of the Department of the Interior has announced acceptance of a master plan concept of the Eros (Earth Resources Observation Systems) program data center to be located 12 miles north of Sioux Falls, S.D.

The data center will be a key installation in the use of remote sensor data obtained from aircraft and spacecraft for purposes of resources and environmental surveys. Under the management of the Geological Survey, it will be a central repository for data processing, interpretation and dissemination.

Computers to be used in the center are now under study, and Interior expects to make an award by June 30.

Computers Rebuild Destroyed School Files

SAN DIEGO—School attendance records destroyed in a fire at Oceanside High School were restored within a day by computers at the Regional Educational Data Processing Center.

Education department officials said the center used special shifts of DP personnel to reconstruct the records. "Within four hours, keypunch operators provided computer personnel with transactions required to operate and reproduce all the destroyed reports and files," an official said.

Census Finds New York's 'Missing' Citizens

WASHINGTON, D.C.—A recheck by the Census Bureau of the 1970 census data shows that New York City's population was 50,526 higher and New York City's population was 27,803 higher than the final totals. The recheck also found that the state's congressional and legislative districts. Also, New York City and the counties whose population were revised upward may get more financial aid in several federal and state-aid formulas that allocate funds on the basis of population.

The errors were attributed largely to computer processing mistakes and, specifically, human errors in tabulating the census forms.

IBM Names First Woman, a Black, to Board

ARMONK, N.Y.—IBM has added another lawyer to its board of directors.

Mrs. Patricia Roberts Harris, the first outside woman on the board, and a black, is a partner in the Washington law firm of Fried, Frank, Harris, Shriver & Kampelman. She served as ambassador to Luxembourg during the Johnson Administration.

Handicap System Unfair, Computer Agrees

BOSTON—For years, amateur golfers have complained that the handicapping system used by the U.S. Golfing Association is unfair because it favors the good players.

Now, a computer agrees.

A study appearing in the June issue of *Golf Digest* claims the weaker player in one-on-one (two-ball) competition should be given 127% of the handicap differential, rather than the 100% currently allowed by USGA.

The study was conducted by Dr. Francis Scheid, a Boston University mathematics professor, who programmed a computer to analyze over two million golf matches.

COMPUTERWORLD

THE NEWSPAPER FOR THE COMPUTER COMMUNITY
TM Reg. U.S. Pat. Off.

ROBERT M. PATTERSON, executive editor, V.I. PARKER, technical editor, RONALD A. FRANK, technical editor, E. ORLANDO LEE, Jr., computer industry editor, EDWARD BRIDE, LESLIE PLANA, JR., computer industry editor, ALAN CRATTELL, Washington bureau, PHILLIS HUBBARD, Los Angeles bureau, THOMAS J. MORTON, Chicago bureau, J.M. BONNETT, European bureau.

NEAL WELDER, national sales manager, DOROTHY TRAVIS, senior editor, FRANCES SHIMAN, S.V., market research.

LEETE DOTY, production manager, HENRY FLING, production supervisor, MARSHA BREWSTER, advertising copy editor.

EDITORIAL OFFICES: 797 Washington St., Newton, Mass. 02160 (617-332-5600; TWX 710-320-6630; Chicago: 15 E. Chestnut St. 60611; (312) 444-5881; TWX 910-221-1377; Los Angeles: 1541 Westwood Blvd. 90024 (213) 826-6055; TWX 910-362-7330; Washington: 2021 L St. NW 20036 (202) 446-2830; TWX 710-320-6016; San Francisco: 199 Geary St. (415) Europe Ltd., 797 Geary St., London, E.C.1, England (01-422-8903).

Second-class postage paid at Chicago, Ill. Published weekly, except for combined issue for the last week in December and the first week in January by Computerworld, Inc., 21 E. Chestnut St., Chicago, Ill. 60611. ©1971 by Computerworld, Inc.

Reproduction of material appearing in *Computerworld* is strictly prohibited without written permission. Send all requests to publisher. Single copies: 25 cents a copy; 50¢ a year, \$15 two years, \$20 three years in U.S. Add \$1 per year for Canada. Other rates on request. MARGARET PHILLIPS, circulation manager, sends weekly notices required for change of residence to circulation manager, Computerworld, 797 Washington St., Newton, Mass. 02160.

W. WALTER BOVD, publication manager, PATRICK J. McDOVER, publisher.

POSTMASTER: Send Form 3579 (Change of Address) to *Computerworld*, Circulation Dept., 797 Washington St., Newton, Mass. 02160.

ATTACH LABEL HERE for address change or inquiry. The label on this card may not mean much to you, but it is the only way we can find you quickly. If you are moving, change address, please send both labels. Please be sure to include zip code before you plan to move. List new address and include a current mailing label or your old address.

First Initial	Middle Initial	Surname
Your Initial		
Your Title		
Company Name		
Home Address		
City		
State		
Zip Code		

Address shown is: ☐ Business ☐ Home

☐ Check here if you do not wish to receive promotional mail from *Computerworld*.

COMPUTERWORLD • Circulation Department • 797 Washington Street • Newton, Mass. 02160

CHECK HERE TO ENTER YOUR SUBSCRIPTION

- ☐ 1 year - \$9* ☐ Payment enclosed ☐ New subscription
☐ 3 years - \$20* ☐ Bill me ☐ Change of address

*Add \$1 per year for Canada. Other foreign rates on request.

Please Circle 1 Number in Each Category

- | YOUR INDUSTRY OR FUNCTION | YOUR TITLE OR POSITION |
|---|--|
| 01 Mining/Construction (or other data system) | 01 Operational Management (nonengineering) |
| 02 Manufacturing (computer or data system) | 02 Computer Professional Staff |
| 03 Manufacturing (other) | 03 Corporate Officer |
| 04 Utility/Transportation | 04 Engineering/Management |
| 05 Wholesale/Retail | 05 Engineering/Management |
| 06 Finance/Insurance/Real Estate | 06 Production/Maintenance |
| 07 Consultants/DP Services | 07 Sales/Marketing |
| 08 Business Services (except DP) | 08 Librarian/Educator |
| 09 Education/Medical/Legal | 09 Other: |
| 10 Government/Military | 10 Other: |
| 11 Communications/Printing/Publishing | |
| 12 Other: | |

**The new PDP-16.
Some people think
it's a computerized
machine controller.**

It is.

**Some people think
it's a special-purpose
computer or maybe
some kind of a pre-
processor.**

They're right, too.

**And some people
think it's a design
breakthrough that
will revolutionize the
computer industry.**

**They're the right-
est people of all.**

The PDP-16 is the first functional computer. Each configuration is specially designed to fit the user's application. You get just enough computer to do what you want done.

How do we know what you want done?

You tell us.

You explain, in English, exactly what you want the PDP-16 to do. Then we put the information into our big PDP-10, and our specially-developed Chartware program goes to work. Chartware and the PDP-10 design your special PDP-16. They figure everything out, up to and including the wire wrap program and the cost per unit for whatever quantity you want. Then we assemble the PDP-16, test it to make sure it does what you want it to do, and there you are. A functional computer. At a very reasonable price.

So how come nobody ever did that before?

Because, until now, it was cheaper to buy a general-purpose computer than to design a special-purpose one.

But now there's the PDP-16. Thanks to Chartware and the PDP-10, the PDP-16 offers the engineer a tremendous saving in design time and virtually eliminates debugging.

But ... about specifications?

The word length of the PDP-16 is the word length you need: 8-bit, 12-bit, 16-bit.

The memory of a PDP-16 is the memory you need: 16 or 256 words of scratch pad memory. If you don't need any memory, you won't get any.

The program capabilities of the PDP-16 are the programs you need, up to 150 program steps.

The specifications of a PDP-16 are the specifications of the job you want done.

That's the real breakthrough. With the PDP-16, you no longer have to fit the problem to the computer. You can finally design a computer to fit your problem.

What's the catch?

The catch is, you have to order ten or more. In OEM quantities, the PDP-16 will control your instrument, machine, or process for considerably less cost per unit than a stripped-down mini.

And what's the price?

Generally speaking, a PDP-16 will cost between \$800 and \$3000, depending on the configuration and on the number of PDP-16's ordered. If you tell us your application, we can tell you exactly how much the PDP-16 will cost in the quantity you want to order.

So write. We can tell you a lot more.

Digital Equipment Corporation, Main St., Maynard, Mass. 01754, (617) 897-5111

digital

Students Have Colorful Plan

CHICAGO - A painting contracting company staffed by college students is using a \$4-million computing system to provide customers in the Chicago area with instant cost estimates for painting their house.

The firm, College Craft, utilizes Computer Sciences Corp.'s Inforter time-sharing system from a keyboard terminal in the firm's headquarters at suburban Glen Ellyn. The terminal is linked by telephone circuits to a regional center.

To prepare an estimate, a College Craft salesman first measures a potential customer's house in terms of 180 factors. In addition to indicating the area to be covered, his specifications include such factors as the height of the house, number of doors and windows, type of paint, number of coats to be applied and the condition of the surface.

He then telephones these specifications to the firm's office, where the data is typed into the time-sharing system.

Using a program developed by College Craft's founders, the computer quickly processes the data and within seconds prints out the costs at the terminal, where an employee relays them to the salesman at the customer's house.

College Craft employs some 90 students for its four-man painting crews, sales and office staffs. The company painted 600 houses last summer and is gearing up for a bigger season this year.

Take
a
ballpoint
pen
and
simply
solve
your
input
problem

General

Researchers at GE's Systems Development Center wanted to test some interactive graphic techniques, but quickly found at low cost. So they connected a Graf/Pen system to their graphic terminal.

Graf/Pen is a ballpoint with a difference. It uses a tiny spark that sends sound signals to mylar strip microphones that record x and y coordinates. Because sound is used, data input is very simple. No software, no costly interfaces, none of the start-up problems often associated with graphic input.

If you have a data entry problem involving written, drawn, formatted or graphic information, chances are that Graf/Pen can help solve it. Simply.

Let us hear from you.

Please tell me more about Graf/Pen. I have an input problem I want to solve simply, in the following application area:

Name _____
Title _____
Address _____
City _____ State _____ Zip _____

GE SYSTEMS DEVELOPMENT CENTER
1000 Main Street, Schenectady, NY 12301
Telephone: 518-535-1155

Member of General Electric Corp., a North American Philips Company

State Probes DP Schools, Dating Bureaus

CW Midwest Bureau

CHICAGO - The State of Illinois is entering the computer school business and the computer dating bureau business, but not as competition to the companies engaged in those profitable enterprises. The state is starting investigations into both those avenues of income.

At the public hearings held here, students from various schools were urged to participate. The familiar lament of no equipment for hands-on training was heard repeatedly. One student described his school's "placement service" as an appointment with an employment agency.

Asked for a clarification, the student said: "When I graduated, they sent me to an employment agency. They said that fulfilled the school's efforts to place me."

D.J. McPherson, executive secretary of DPMA, testified that "the opportunities [for DP school graduates] in the field are not as good as the educational community has presented them."

McPherson added that many of the DP schools do not follow the DPMA guidelines or attempt to meet the DPMA standards.

In the lonely hearts department, both the state attorney

general and the Cook County state's attorney's office are conducting an investigation into computer dating bureaus.

Officials said they would prefer not to discuss the details of the investigation at this time, but did say that the investigation was being conducted to see if criminal charges could be brought against the individuals and companies in the spotlight.

The investigators are also looking into the possibilities of civil actions based upon contract default.

Both investigations, authorities said, will continue for some time.

"At the least," one source said of the DP schools, "some 'training' schools will be forced out of business by changes in state regulations."

Penn Central Asks Federal Court To Get Back Its 277 'Lost' Boxcars

PHILADELPHIA - Penn Central, a railroad with enough troubles already, went to a federal court here to ask that the court obtain the return of its 277 boxcars which the railroad says were stolen by "wrongful appropriation."

In a petition to U.S. District Court Judge John P. Fulam, the railroad's trustees said the boxcars had been repainted and re-numbered to conceal the theft. The action requested the return of the boxcars which it claimed were now in the possession of a tiny Illinois railroad, the LaSalle and Bureau County, and two other Illinois corporations, Diversified Properties, Inc. and Magna Earth Enterprise, Inc.

A nationwide search last March by FBI agents uncovered Penn Central boxcars on the 15 miles of track of the LaSalle line. At that time, federal attorneys hinted that the government felt there had been "manipulation" of Penn Central's computer systems (CW, March 31).

Also named in the petition were Joseph C. Bonanno of Essex Falls, N.J., president of Diversified, and Anthony Crisafi, an officer of Magna Earth, from Utica, Ill.

The petition said that the three companies and the two officers had "wrongfully appropriated" Penn Central cars, which the line had leased from Equitable Life Assurance Society.

**360/85 Remote Batch
Is making It BIG in
New York and Boston.**

**One reason:
2,000,000 bytes
of core.**

And there are many others. Like 9 channels, 7 2314's, 22 tapes and a special billing algorithm that charges you only for the facilities you actually use on the system. Reasons why more and more companies are using our Big Computer power: a \$12,000,000 360/85.

The kind of power you need to solve big, complex problems. Handle peak loads. Get faster turnaround. And save up to 50% or more on just about any kind of processing—scientific or commercial.

If you're anywhere in the Northeast, you can use the 360/85 right now, through your own dial-up remote batch terminal, any System/360 or one of our terminals. Dial-up is local in New York and Boston.

So make it BIG with the Model 85. Call our nearest office today!

New York: 212-758-2058
Boston: 617-899-5315
Albany: 518-452-7444
White Plains: 914-428-3804

EDP RESOURCES INC.
One North Broadway
White Plains, New York
10601



DP Bookkeeping Benefits Small Theater, Up-to-Date Figures Receive Wide Acclaim

By Joseph Hanlon
CW Staff Writer

BALTIMORE, Md. — A chronically underfunded small theater may be the last place you would expect to find computerization. But Center Stage here finds that the computer can help beat some of the problems unique to such a group.

The application is not unusual — general accounting performed by a service bureau at the end of each accounting period. General Manager David Frank estimates that it solves many of the problems endemic to performing arts groups and costs \$400 per year. "We couldn't hire an accountant for that price." By increasing the

accuracy of its accounting, the system also aids the theater in receiving grants.

Short Staffed

"We are always inefficient because we are always short staffed and have cut below the level of efficiency. Before the computer we didn't have a hope in hell of getting accurate financial information," he continued.

"When we were in our worst financial trouble we were too short staffed to keep track of where the money was being spent."

After each of the nine productions, all the books are sent to the service bureau, which does the accounting. In a few days,

the theater has a report of how much has been spent in each area and whether each department is meeting its budget.

Previously, Frank said, people such as the customer could only guess if they were close to their budget.

Account for Grants

A theater gets several special benefits from such a system. Theaters receiving foundation and government grants must account for them separately, which is greatly facilitated by using a computer. Further, if one production loses more money than usual, necessitating budget cuts for the next show, the financial figures are there



Betsy Stoll, Steven Gilborn in *Scene From Twelfth Night* soon enough to aid Frank in making intelligent cuts. Finally, computerization helps the theater receive aid. "We are generally suspect of being well meaning artists who don't know much about business. Now cor-

porations have more respect for us, and it is easier to get contributions."

Center Stage is a professional theater with an annual budget of about \$400,000. The theater seats 315 people.

'Relevant' Student Data Said to Require Better Definition

CW Washington Bureau

WASHINGTON, D.C. — Because computerized records could lead to an invasion of a student's privacy, only information directly relevant to the educational process should be kept. But the problem is that the criterion is fairly broad, since many aspects of a child's family life affect his school progress.

In an article in *May's Today's Education*, Journal of the National Education Association, Mrs. Vivien S. Teitelbaum of New York's Russell Sage Foundation also says, "the mistakes of youth (real or imagined) will be indelibly recorded to haunt the individual the rest of his life" if the predicted computerization of schools in this decade materializes.

It has become necessary, the article continues, to "reconcile the conflicting claims of society's right to information and the student's right to privacy," because computerized school records now contain "batteries" of reports from both schools and non-school agencies.

Two problems, according to the author, have not yet been resolved: Deciding what kinds of information about pupils should be maintained in schools; and who should have access to this information.

The broad definition of "relevant" data results in some highly personal information being included — and some of this data may be based on "unverified anecdotes, accusations and hearsay," Mrs. Teitelbaum points out in the "ethics" need for accuracy since records are kept for some time after a student graduates.

The rights of school personnel, parents and students, and non-school agencies should be considered in establishing a policy governing access to information, according to the article.

Data Bank Logs Hotel, Auto Reservations

MCLEAN, Va. — International Reservations Corp.'s (IRC) computerized national reservation center here keeps tabs on the availability of hotel rooms and car rentals by using two IBM 360/50s and 60 Sanders 720 CRT terminals. One 360/50 has 512K core memory and the other is a backup CPU.

The Sanders terminals were selected over IBM 2260 CRTs primarily on the basis of economics, explained President William R. Lousigan. Another IRC executive added that the company had actually ordered 720s and 2260s simultaneously and found that on a cost-effective basis the Sanders units were 25% cheaper.

Study guides are now available

1971 Registered Business Programmer Examination

To be given on October 16

The second annual Registered Business Programmer Examination will be held on Saturday, October 16, 1971 at over 105 examination centers in the United States and Canada. Developed by the Certification Council of the Data Processing Management Association, the program grew out of a recognized need to identify that corps of practicing business programmers who have attained a level of technical knowledge which qualifies them to effectively and efficiently translate human needs into computer instructions.

Intended as an aid in the establishment of recognized professional standards within the data processing industry, the program is of value to both employer and employee as the data processing industry seeks to better locate, motivate and adequately remunerate qualified business programmers.

The examination consists of 180 questions distributed between work problems and detailed knowledge questions in the general category areas of: principles of programming, meta programming systems, problem-oriented languages, data processing systems design and computational topics. All questions will be directed to the level of knowledge of a Senior Business Programmer. Eligibility is not restricted to DPMA members — any person may sit for the examination. Applications for the Registered Business Programmer Examination must be filed by August 1, 1971.

Please forward the "Business Programmer Examination Announcement and Study Guide" along with application and test site list.

MAIL COUPON TO:
Certification & Testing Section
DPMA International Headquarters
P.O. Box 195
Park Ridge, Illinois 60066

name _____ title _____
firm _____
address _____
city _____ state or province _____ zip code _____

Editorial

What Problems?

We have been trying, for more than a week now, to figure out why the SJCC session on the "Image of the Industry" left such a strong but indefinable sense of uneasiness.

At first we thought the sensation was generated by the reversal of roles. The panel, composed of two editors from ABC News, a *Time* editor and White House Communications Director Herbert Klein, wound up defending computer applications to the audience of computer people.

Then we decided the feeling came from the panel's attitude. Gone was any trace of awe. The computer, the panelists indicated, is simply a tool that people sometimes misuse.

If this thinking reflects that of the public, the computer community has done the public no service in killing off the "giant electronic brain" myth.

What we may have now is a public that understands computers as number-crunchers and super-clerks—but that has absolutely no understanding of computers as de facto decision-makers.

Comments from readers who attended the session are invited.

SJCC--Cause for Hope

WASHINGTON, D.C.—It is more than a week since the Spring Joint Computer Conference ended its annual ritual in Atlantic City.

In the interim, I have been sorting out my impressions of the show.

Generally, the SJCC had a subdued atmosphere. *Computerworld's* pre-show cocktail party seemed to have set the stage. It was dedicated to those in the industry who had "survived" the economic reversals of the past year.

As the show itself got under way there was almost a hushed reverence in the Convention Hall—perhaps out of respect for those who had not survived and were no longer in the computer business.

But as the first day progressed, some of the undaunted optimism that marks the industry began to seep through the cautiousness.

The habitual attendee of the semiannual joints was first struck by the contrast in the exhibit hall between this year's showcase and those of the past. The number of exhibitors was down considerably—almost half that of a year ago—and by edict of sponsoring Afla a lot of the buckstering of the vendors had been gratefully discarded.

Wide aisles separated the rows of booths and one could roam about at an almost leisurely pace. There was time to look closely at the products and to discuss them with the vendors.

The technical program also was a triumph for the sponsor. It got off quite properly with an effective keynote address by Sir

John Wall, chairman of Britain's International Computers Ltd., who schooled the conference through of "responsibility."

He suggested three areas where American companies must exert greater responsibility: privacy of the individual, international aspects and educating and training the public "to accept and take advantage of the enormous benefits which EDP can provide."

I have long advocated that the computer community be held accountable in two of those areas—privacy and communicating with the public.

The conference theme, it appears, also jerked Aflps into action. The organization put together a meaningful program that included close looks at the impact of computers on various aspects of society.

In the past, I have reprimanded Aflps for its unresponsiveness to the needs of the DP community. At the SJCC, however, testament was given to its ability to accept positively—a posture I hope the organization will continue to maintain in the future.

Overall, there were signs at the Joint that the economy may be finally emerging from its long somnambulance. Several recruiting companies, for example, were actually soliciting business. And for those of us who chafed in annoyance in past years at the antics of the headhunters at the Joints, it was like welcoming an old friend back. Absence had made the heart grow fonder.

A couple of peripheral company executives sounded optimistic notes when I talked to them about the months ahead.

Hopefully with the return to a "good old days," the Joint conferences will not revert to what they had once been. I would like to believe that the frenetic atmosphere that marked these shows will become part of the history, and the lore, of our industry.

I'm looking forward to the Fall Joint in Las Vegas in November.



Letters to the Editor

ABM Computer System Technology Upgraded

I read in *Computerworld* recently that my former professor, Charles H. Davidson, has joined the Computer Professionals' Alliance in connection with his ACM affiliation.

Admittedly, I have a biased viewpoint by reason of working at Cornell Aeronautical Laboratory in the ABM field; nonetheless, I wonder what the readers think when they read that the position of this group is that ABM computer systems are unlikely to work.

They may not realize but certainly should be made aware that the computer system driving the Safeguard radar in the Kwajalein Test Site successfully manages intercepts as reported in the press; that it is manifestly clear that the technology used in that Safeguard computer system has been upgraded over the last several years since it was designed; and that these are truly professional accomplishments.

I cannot help wondering if Davidson's convictions are logical deductions based unfortunately on an inconsistent set of false assumptions, radar/interceptor resources, computer resources and appropriate deployment experiences.

And I finally wonder if these gentlemen have published or would publish the assumptions and logic which lead them to the conclusion that the ABM systems are unlikely to work.

T.R. Benedict

Clarence, N.Y.

How to Solve Problems Of DP Services—Cancel Out

I have given up trying to get sensible answers to my complaints and criticisms about computerized services—and so have quite a few of my friends. The result is no book clubs, or record clubs, and I don't use credit cards. They can be quite easily torn up, you know, and with their destruction goes some of the reputation of the firms concerned, and some of the money that would have been used to pay your DP pros.

But I have not stopped wondering about just why I can't get sensible answers—and I think I have found the reason at last. Apparently DP people don't think any criticism or complaint should be voiced by ignorant people like me and the millions of other non-DP people. At least that is what the Data Processing Management Association—one of your major societies—seems to think.

In the May issue of its journal, Executive Director R. Calvin Elliott endorses about how criticism should be restrained. His rule 4, which practically authorizes his members to ignore anything I say, reads, "The antagonist to the topic must be able to offer a suggestion which, in his opinion, is superior to the one under discussion. If a participant does not like the way things are, he must be able to offer a better solution."

So Elliott believes that I, as a member of the public and even lower, a housewife, shouldn't be allowed to criticize the efforts of his DPMA elite just because I can't give a better solution. I should just remain quiet and let them draw their salaries, should I? I don't agree.

I still like my solution of simply cancelling out. I know it can hurt and that a few more solutions like this to your computer-centered problems can lead to even more of your profession's devotees losing their jobs—but while they won't listen to valid criticism, they don't deserve their pay.

Heather Dobbs, CCBW*

(*Chief Cook & Bottle-Washer)

Framingham, Mass.

There Are Standards Galore

I am surprised that Alan Taylor does not have a six-foot white beard. Where has he been the last 20 years. His article on operations printing standards might have been worthy of some copy in the early 50s.

Taylor's observations of the mismanaged, unsupervised operation fiasco certainly is not worthy of copyright. There are standards galore. Most users observe them and most importantly enforce them. Apparently his installation does not. Taylor must have a nice file of this type of copyright.

How about asking him to share a page or so on his observations of the "Employee Rubber Band Shooting Incident."

James R. Hansen Sr.

Computing Operations Manager
System Development Corp.
Santa Monica, Calif.

I would be glad to see Hansen's standards, and methods of enforcement. No effective standards are contained in many of the computer manufacturers' operator's training courses, which is where most users go. My observations were taken during 1971, at a variety of different installations, although few had the financial resources of System Development Corp.'s Corporate Computer Facility. A.T.

Getting Down to Basic

Paul Hultquist reviews the book *Basic Basic* [CW, March 31] including the snide remark "...but how far one can go with Basic, particularly with a high school audience."

I suggest Hultquist pull his head out of the sand by doing the following:

- Read Page 7 of the same issue of *Computerworld* about Compcomp.
- Talk to some of the 2,000 plus high schools who are using Basic—in my own state of Colorado.

- Look at the new extensions of Basic. It is becoming a rather powerful language.

- Join Shaft—The Society to Help Abolish Fortran Teaching.

LeRoy Finkel, President

Dynmax

Memark, Calif.

These Can Cut Complaints Drastically!

Four New Standards Suggested. . . That Makes Eight

Most people in the industry know of the great national organizations, such as ASIM, DPMA and ACM. In fact there are a few other organizations which are purely local in their scope. One of them is the Central Ohio Association for Computing Machinery, which was formed in 1955 and maintains an unusually active program. Last month I had the pleasure of talking to

The Taylor Report

by
Alan Taylor, CDP



Members of the audience then proceeded to suggest three new standards, two of which followed the normal course of being suggestions as to how items should be programmed, and one of which went to a totally original point and dealt with how problems potentially related to

computer errors and programmer responsibility and, during the talk, cited some of the standards that had been suggested by readers of this column in the past—such as the Winstandley standard, the Sutter standard, etc.

The idea of these standards was explained to be a way of cutting down the volume of current complaints about computers which are hurting the industry. Members of the audience then proceeded to suggest three new standards, two of which followed the normal course of being suggestions as to how items should be programmed, and one of which went to a totally original point and dealt with how problems potentially related to

computer errors should be handled. More of that one later.

Interest During Delays

The first one, suggested by a Mr. Jones, and therefore called the Jones standard, dealt with what should happen when an item is contested in a bill such as one he had received from R.H. May's. His point was about interest charges being carried on while problems were being investigated, sometimes with great delays.

In view of the high interest rates he felt that this was wrong because it gave rise to major objections, and so he suggested a standard that "interest charges should be frozen when the items were contested."

This certainly seemed to be able to stop many computer complaints, and no points were raised. A modification was suggested by myself as being necessary to permit such a standard to really be implemented.

This was that, "An input method should be provided routinely for containing charges or claiming credits." I liked this because it would at last get round the old horror: "Please ignore this notice if you have paid recently."

The point about the many computer systems that provide input mechanisms for payments, and for names and addresses, is not for a statement of disagreement to be well accepted by the audience.

The argument was that contesting computerized charges was a normal part of the environment that a billing system should live in, and that the systems and forms designers should acknowledge it and provide for it.

Hidden Variables

The second major standard came from a Mr. Young of the Defense Construction Agency. Young suggested that, "Variables used in a computation should be understandable and included in the output."

His point was that a recipient of a bill, or other documents, should be able to check the

Draft Set of Standards

No.	Originator	Taylor Report	Suggested Standard
1	Sutter	March 10	Check Input Validity
2	Taylor/Sutter	March 10	Check Output Validity
3	Winstandley	March 31	Coding Should Be
4	Sanford Jones	March 31	A Bill Should Be Payable
5		This issue	Freeze Interest Rates
6	Taylor/Jones	This issue	On Contested Bills
7	Young	This issue	Provide Easy Input
8	Herwitz	This issue	For Contesting Records
			Should Be Understandable
			Respond From Reason
			Rather Than From Fear

When the first columns on arrogant systems analysts appeared last November, Carl Dessen, chairman of the American Federation of Information Processing Societies' public information committee, pointed out that they were valuable because "these design principles have scarcely been articulated at all as yet." Since then readers of the column have articulated possible standards—and these are shown above for the information of Dessen and others in the industry.

computation; yet there are a number of cases where he is not able to because the variables used in the computation are not known to him. Again, a good standard, I am not personally too entranced with the wording, but the idea is good.

Human Failures Handling

But the most exciting suggestion from the meeting came from Dr. Paul Herwitz, another speaker. Herwitz, who is IBM's program director for programming resources, picked up on some remarks of mine that the evidence developed during the past few months suggested that when an error did occur the people on both sides of it—both inside and outside the computer room—reacted psychologically badly [CW, The Taylor Report, April 7]. His suggested standard was, "Respond from reason rather than from fear." I think that is an admirable addition. And I think that Herwitz's standard, although much harder to implement potentially than a lot of the other ones, is probably the most valuable

single standard of the lot.

To bring everything back into focus let us see what standards we have got, and how long it has taken us to gather them. The first article in this series was on "The Arrogance of Systems Designers," and appeared Nov. 18, 1970. It dealt with forms design and suggested that systems analysts should provide for complete output. Actually calling ideas "standards" did not develop until March 10, when Neil Sutter suggested the first. Now—only six months after the start of the series—we have a veritable list!

Let's use them!

© Copyright 1971 Alan Taylor. Reproduction for commercial purposes requires written permission. Limited numbers of copies for non-commercial purposes may be made provided they carry this copyright notice. The use expressed in this column does not necessarily reflect those of Computerworld.

WHAT'S AHEAD for the computer industry in the 1970's, as the recession draws to an end?

HOW WILL the main-frame builders fare? The independent peripheral makers? The crowded service and software industry?

THE PROSPECTS are outlined in the "Gray Sheet" Annual Review & Forecast Issue... covering all industry segments. Send \$10 for the issue, or \$75 for a 24-issue subscription including the annual review.

EDP industry report

Department N-20
800 Austin Street
Newtownville, Mass. 02160
617-969-4020

CDP Questionnaire

Returns Support Exam Content

Clear trends appeared early in the voting on the CDP Questionnaire [CW, The Taylor Report, May 19]. By May 20 enough votes, from 15 states, had arrived to allow a preliminary tabulation, which showed that while the CDPs supported the inclusion of the Principles of Management and Mathematical Methods sections of the CDP, they unanimously wanted drastic changes in the way it is being administered.

The examination is presently controlled within the DPMA and is not published, but 88% of the voters wanted the other professional societies to be involved, and 52% of them wanted the CDP holders themselves to have a say also. Most voters wanted the questions published, perhaps after three years, either with or without answers. A substantial minority—30%—however, agreed with present policy in keeping it secret.

On the question of forming a CDP organization, the voting went unanimously in favor of one being needed, with 90% saying that it should be independent, and 10% for it being a subgroup of DPMA. Curiously, none of the people who wanted it to be a subgroup of DPMA said he would be interested in joining such an organization!

There is still time for you to vote—whether or not you are a CDP, or in favor of any CDP organization—and have your vote reported at the DPMA Conference at Houston. Use blank paper if you haven't got the original ballot, and send it to Alan Taylor CDP, c/o Computerworld, 797 Washington St., Newton, Mass. 02160.



"Two Can Play at This Data Game!"

**370/155
370/145**

**CPU's Available For Less
Save 30%!!**
CW Box 3390
90 Austin St.
Newton, Mass. 02160

**WE
NEW-USED
TELETYPE**

• Any Model
• Any Condition
EASTERN DYNAMICS CORP.
1108 Suffolk Ave.
Brentwood, N.Y. 11717
516-231-8800

— CHICAGO AREA —
COMPUTER TIME
* FACILITIES MANAGEMENT
* DATA PROCESSING SERVICES

ONE: **360/30 65K** **360/40 128K**
312 6-2311 2314, 6-2311
939-1323 5-TAPES 8001/600P1 5-TAPES 8001/6000

datanamics CORPORATION OF AMERICA
824 SOUTH MICHIGAN AVENUE • CHICAGO, ILLINOIS 60608

**Day in, day out, year in, year out
Computer time is our business**

tbi

TIME BROKERS, INC.
500 Executive Boulevard
Stamford, N.Y. 10552
(914) 592-4065

The only national brokers of computer time

Atlanta Boston Los Angeles Philadelphia
Baltimore Chicago New York Washington, D.C.

Wescon Moves Site

SAN FRANCISCO—The 1971 Western Electronic Show and Convention (Wescon) in August will be held in downtown San Francisco, rather than in the Cow Palace as previously scheduled.

All exhibits, technical meetings and other activities will be presented in Brooks Hall/Civic Auditorium, according to Robert M. Ward, chairman of the Wescon board of directors.

"The very best place for a 700-booth show in San Francisco is Brooks Hall. Wescon for 1971 will be a 700-booth show," Ward wrote to exhibitors.

Wescon will greatly expand the continuous shuttlebus service from the airport and Peninsula locations for the convenience of visitors. "For exhibitors, the saving in car rentals alone is a big item," Ward said.

Golda Meir to Address Jerusalem Conference

JERUSALEM—Prime Minister Golda Meir will address the opening session of the Jerusalem Conference on Information Technology, scheduled here Aug. 16-20. The conference's theme is "Impact of Computer on Developing Countries." The meeting is described as a "coherent dialogue between developed and developing countries on effective international cooperation in the field, for the benefit of mankind," by Prof. O.J. Fagbemi, of Nigeria.

Fagbemi is one of several regional vice chairmen who will join some 500 colleagues from industry, government and universities at the four-day meeting.

At the conclusion of the Jerusalem fete, many participants will go on to the 11th Congress '71, scheduled for Aug. 25-28 in Ljubljana, Yugoslavia.

Program Chairman is Prof. Gerald Estrin of UCLA.

Software Systems Development

A NEW CHALLENGE

Boston Area commercial computer manufacturer is seeking a number of highly creative software specialists to assume key positions requiring new significant individual design contributions.

Will be responsible for establishing design direction, design and implementation for complex programming/communications systems involving

- Data Management
- Operating Systems
- Communications Systems
- Language and Compiler Design
- Conversion Systems

All inquiries are held in strictest confidence.

Please forward your resume to: Box CW 3391

60 Austin Street, Newtonville, Mass. 02160

Only resumes sent directly by candidates will be considered.
An Equal Opportunity Employer



COMPUTERWORLD

societies/user groups

Datafair Features Peripherals And 'Off-Duty' Controversies

CW European Bureau
NOTTINGHAM, England—Datafair '71, the British Computer Society's (BCS) contribution to the computing exposition scene, never seemed to quite take off.

Held at Nottingham University, it was spread across campus and seemed to suffer from a general malaise: too little user enough to generate attendance, and too few visitors and exhibitors.

Perhaps one of the most pleased exhibitors was Nixdorf Computer, the growing West German concern which reported a marked interest in its general DP lines, in spite of a prevalence of terminals at the show.

Viatron, like other companies, treated the show as a public relations exercise; for this company, it seems to have had more point.

The System 21 equipment was still of great interest to those requiring data preparation at a remote site. All Viatron 2111 video station facilities were shown, including data transmission, media conversion, printing, tape search and reformatting.

Lamson Industries acquired Viatron's British division late last year, and now owns exclusive manufacturing and marketing rights in the UK and Ireland. Lamson was previously the UK agent for

Nixdorf. IBM's exhibition included System/3 Model 6, a System/7, an 1130 and several video display units.

England's ICL did not participate in the industry exhibition, but staged its own presentations of computer-aided design and a series of lectures.

Philips was represented by its MEL Equipment Co. through its newly formed Computer Peripherals Division.

On show were the Digitronics range of paper tape readers, handlers and punches. Growing interest in encoders was represented by the X1100 series; another item of interest was the single disk file designed for use with a minicomputer.

The British Computer Society conducted a symposium with the double theme of Effective Business and Scientific Computing. It spanned 14 technical sessions in the business section, plus eight scientific meetings.

Although several of the papers and discussion sessions provoked "off-duty" controversies, the majority of the papers were no more interesting than is usual at such functions.

In fact, BCS will not be publishing the papers, although selected abstracts will be included in forthcoming editions of BCS publications.

IEEE, Ifip Announce Honors

NORTHIDGE, Calif.—Harry Hayman has been named as the first executive secretary of the IEEE Computer Society, according to a recent announcement by society President Edward J. McCluskey. Hayman is presently employed in technical management by Nasa in Information Systems, Office of Advanced Research and Technology, and the Apollo Program Office.

The Computer Society of the Institute of Electrical and Electronics Engineers is the largest organizational entity within IEEE, and has over 17,000 members.

In a separate announcement, IEEE said David A. McLean, who retired last year after more than 41 years with Bell Laboratories, received the Merrin J. Kelly Award for "outstanding contribution in the field of telecommunication."

Dr. Richard I. Tanaka, outgoing president of the American Federation of Information Processing Societies, has been elected a trustee of the International Federation for Information Processing (Ifip). He will serve a three-year term.

Dr. Edwin L. Harder has received the "distinguished service award" from the American Federation of Information Processing Societies.

Harder holds 65 U.S. patents in control and computers, and has authored over 150 technical papers.

The annual award recognizes contributions to the computing field through AIPs. Harder has served as both president and vice-president of the federation, and is currently treasurer of Ifip.

The Western Electric Show and Convention (Wescon) has named Edward T. Clare of San Diego and Gerald M. Goldenstern of Los Angeles to four-year terms on the board of directors, and A.P. Oliverio of Palo Alto to a three-year term.

The Utah Engineering Council has awarded its Outstanding Engineer Award for technical competence to Dr. Ivan E. Sutherland, president of Evans and Sutherland Computer Corp., Salt Lake City. The holder of an MIT doctorate, Sutherland is a computer graphics pioneer.

CHECK HERE TO ENTER YOUR SUBSCRIPTION

- ☐ 1 year — \$9* ☐ Payment enclosed ☐ New subscription
☐ 3 years — \$20* ☐ Bill me ☐ Change of address

*Add \$1 per year for Canada. Other foreign rates on request.

First Initial	Middle Initial	Surname	012194
Your Title			
Company Name			
Send to: Address			
City		State	Zip Code

Address shown is: ☐ Business ☐ Home ☐ Check here if you do not wish to receive promotional mail from Computerworld.

COMPUTERWORLD • Circulation Department • 797 Washington Street • Newton, Mass. 02160

PLEASE CIRCLE A NUMBER FROM EACH CATEGORY

YOUR INDUSTRY	YOUR TITLE OR FUNCTION
01 Mining/Construction	01 Operational Management (nonengineering)
02 Manufacturing (computer or data system)	02 Computer Professional Staff
03 Manufacturing (other)	03 Corporate Officer
04 Utility/Transportation	04 Engineering/Management
05 Wholesale/Retail	05 Engineering/Scientific/R&D
06 Financial/Insurance/Real Estate	06 Production/Maintenance
07 Consultants/DP Services	07 Sales/Marketing
08 Business Services (except DPs)	08 Librarian/Educator
09 Education/Medical/Legal	09 Other
10 Government/Military	
11 Communications/Printing/Publishing	
12 Other	

A Needed Diversion?

Insults, Interruptions 'Ineffective' Peace Implements

By Thomas J. Morton

ATLANTIC CITY—Before last fall's Joint, the Computer People for Peace (CPP) expressed dismay at what it felt was a total lack of industry concern for issues it deemed vitally important to the industry.

After a winter of pleading its case to Afips, CPP came to the Spring Joint Computer Conference with the avowed purpose of arousing concern over its causes: peace in Vietnam, jobs or other

Computerworld assigned Midwest Bureau Chief Thomas J. Morton to cover the scheduled and unscheduled events of Computer People for Peace at last month's Spring Joint Computer Conference. His analysis is based on extensive interviews and observations.

solutions for the poor and the more general "rights of the people."

The members demonstrated their concern over this last topic by interrupting technical sessions being conducted by prominent industry representatives, by shouting obscenities from the floor and by apparently intimidating at least one speaker not to show up [CW, May 26].

Although given an arena and a time slot to air its thoughts, the group paraded into other sessions and was almost forcibly ejected by the more serious-minded attendees who had paid their way hoping to expand their own expertise. CPP got in free, with Afips' apparent blessing.

With this Afips sponsorship and support, CPP had an ample opportunity to get its message to the industry.

At least one traditional procedure was waived on behalf of CPP. Afips normally bases technical sessions on a determination that presentations will meet established program standards, speakers will present well-documented theses, and all formal papers will be referred before presentation by a panel of experts.

'Departure'

This year, a "concerned citizens forum" was set up, in which there was to be "a departure in several important respects," according to an Afips publicity release.

The Afips promotion promised a theater-in-the-round format, a data base rich in subjective opinions, analyses and recommendations. It also said that the forum would present "an unusual degree of freedom in approaching issues from a social, economic or political point of view."

It concluded by saying that "the issues are important, the public is concerned and the approach is new."

No one seemed to deny any of that.

And What Happened?

In four of its scheduled five sessions, CPP presented views on data banks ("The right to be un-listed"; minority groups and women in the DP industry; computers and the military; and health systems (an unemployment session was canceled so CPP could apparently interrupt a separate technical meeting on international problems and developments).

At each of the CPP sessions, the public was encouraged to attend, encouraged by both Afips and CPP.

"They won't listen," said one Joint attendee, a huge ACM button on his sports jacket. "If you ask a question of one of their speakers and they don't like it some of the audience jumps on you or the speaker insults you," he complained.

In the session on data banks, a young man told the panel, "You are just looking for something the government does (the 1970 Census) that you feel is bad, and then you spend all your energy trying to find facts that substantiate it. Don't you ever look for something that could be

good, and then try to prove that?"

When promptly informed by CPP members in the audience near him that the government was "intrinsically evil" he walked out.

No one, CPP or the audience, explored the middle ground of investigating a situation without a predetermination that a project is good or evil.

In the minority groups/women session, a woman who was obviously touched by the words of a soft-spoken, articulate young black man speaking on problems facing young blacks trained for EDP careers asked what could be done to help.

She was told that her question was "stupid" and that she should know the answer without asking.

The CPP-led sessions were attended by the same CPP crowd, and often turned

into arenas where CPPers talked among themselves in slang spiced with obscenities.

The "invited" public, those "encouraged to attend," was left sitting and

CPP Analysis

unparticipating with embarrassed expressions on their faces.

Something Positive

The appearance and the participation of CPP was not entirely negative. The group did bring to the front the issues it felt important. It did remind a festive-minded conference crowd of war, unemployment, the needs of minorities and the threats to

the invasion of the privacy of the citizen. CPP had some sessions in which the audience was talked with instead of the historical talked to, with a limited question period following. Finally, CPP provided a diversion at a time when diversion was important.

Because of its antics, however, like the planned citizen's arrest of an FBI agent (canceled when the agent failed to show), like a peace rally on the Boardwalk that was filled with both obscenities and accusations, CPP appeared ineffective and hardly anyone took them seriously. During that rally, one spring jointer summed up the attitude of the conference:

"They're funny," he said, as a CPP speaker accused press photographers of taking pictures for the police, "but this industry needs a good laugh right now."

AD-5 TAPE PUNCH

We streamlined the machine
and the price tag.



Knowledgeable EDP people have always liked the quality, performance, and cost efficiency of Addo-X tape punch systems. Not all of you, however, have bought.

"Great stuff!", is the kind of comment we've been hearing for some applications, "but that's more horsepower than I need."

So we've reduced the horsepower a bit, and streamlined the price tag a lot.

Which means that now you can enjoy the quality, performance, and cost efficiency of Addo-X tape punch.

The new equipment is the AD-5 series. And for the alert buyer it's got two additional, big advantages. If you've been setting

for other tape punch units without the Addo-X name, the AD-5 will fit into your present program with absolutely no modifications needed: use the AD-5 for replacements and additions. (The new companion series, AD-8, is specifically tailored for other existing tape punch systems — again without modification.)

And later, with either group, if you should require more horsepower, you've got a great headstart.

ADDO-X

We've got an expert field analyst ready to fill you in with all the details. Call or write today. Addo-X, Inc., ADP Division, 437 Madison Avenue, New York, N.Y. 10022, Phone (212) 758-9171.

Addo-X, Inc., ADP Div. 437 Madison Avenue New York, N.Y. 10022	
Name	
Title	
Company	
Address	
City	
State	Zip

Data processing should contribute to profit. Addo-X helps it happen.

T - TEST FILE GENERATOR

- E** - Sequential or Indexed - Sequential
- S** - Variable Length Records
- T** - Tape, Disk, or Data Cell
- C** - Multiple Formats
- U** - Reduces Use of Live Files
- B** - Easy to Use
- E**

CONTACT: Ron Laubert
COMPUTER SERVICES
CORPORATION
23225 Northwestern
Southfield, Michigan 48075
313/444-5030



P.S. - NYC + Boston Areas

contact us to see how TESTCUBE
can benefit your staff by attending
a TESTCUBE seminar.

June 8 (NYC) (212) 344-7750; June 9 (Boston) (617) 237-5273

Investment Center Looks Back, Ahead

PORTLAND, Ore. - Portland State University's Investment Analysis Center, a research and educational facility, marked the completion of its first two years of investment research with the publication of its biennial report describing its resources and activities.

The center's computerized data file and studies on the Pacific Northwest Over-the-Counter stock market are the most comprehensive for any regional stock market anywhere in the U.S., according to its director, Dr. Shannon Pratt, an associate professor of business.

Currently, Pratt and one of the center's students, Dale Zacher, prepare a monthly analysis for the Pacific Northwest OTC performance that is published in the *Oregonian* and *Seattle Post-Intelligencer*.

The center also has a computerized data bank covering every corporate insider transaction on the New York Stock Exchange since 1960. Another data bank created at the center records analysts' estimates of

the earnings of New York Stock Exchange companies. It requires over 140,000 computer data cards.

Education

The center also has computerized the trading data weekly for the 100 individual New York Stock Exchange stocks for which odd-lot trading statistics are made available.

In addition, over 100 original research projects, ranging from a five-page paper on "Be a Winner

in the Stock Market" to comprehensive technical reports in excess of 100 pages on such subjects as "Corporate Insider Trading and Stock Market Profits," "The Valuation of Common Stock: Warren and a Test of the Odd-Lot Trading Theory," have been completed by the center's students and faculty. Because their work involving the use of masses of computerized data and original research design and analysis creates useful information with immediate application for making investment decisions in the real world, these business undergraduates and graduates, most of whom are planning a career in the field of investments or some aspect of finance, are getting an educational experience that couldn't be matched in the more standard classroom, Pratt feels.

Edutronics Offers**'Essentials of Basic'**

LOS ANGELES - The "Essentials of Basic," a course for the time-sharing terminal user, the casual computer user or anyone who wants to learn the "Basic" programming language is available from Edutronics Systems International, Inc.

The first part of the course introduces "Basic" and teaches how to do input, computation and output, including the READ statement, the DATA statement, the LET statement, the PRINT statement, and the END statement.

The second part emphasizes program control statements, such as the GO TO and IF/THEN statements used for branching. Also presented are techniques for implementing control-controlled loops including pairs of FOR and NEXT statements.

Edutronics developed "Essentials of Basic" in cooperation with the University of Detroit. Dr. Joe Hitt, dean of the Graduate School and Research, is the instructor narrating the film lessons. According to Sherman Jay Titens, Edutronics president, the casual computer user (scientist, engineer, student, teacher, manager, users of time-sharing terminals) will benefit most from the course.

CAI Program Teaches**English Skills on HP Minis**

PALO ALTO, Calif. - A Harcourt-Brace program for teaching elementary English skills through computer-assisted instruction is used on Hewlett-Packard minicomputer system.

"The fourth, fifth and sixth grade material has been translated into computer programs in the HP version of the Basic language," according to George F. Newman, general manager of HP's Computer Products Division.

Hewlett-Packard estimates that more than 1,000 minicomputers are in use in schools throughout the world, and at least 1,000 more schools are using remote terminals that allow them to tie into centrally located minicomputers on a shared basis.

Inputted Computer Wins**Best Project in Science Fair**

PHILADELPHIA - A Handwritten Inputted Computer won the award for the best project in the senior division at the Delaware Valley Science Fair. Walter B. Schiele, a junior at Northeast High School, took two years to build the computer at a cost of \$51.40 for parts. The device can recognize handwritten numerals and arithmetic operational symbols from hand movements and can add, subtract, multiply and divide.

data modem?

To pick the right data modem, pick the right company. The company you choose can make a difference in the quality of service you receive. UBC offers a wide range of data modems to meet your needs. For more efficient use of your data modem, contact UBC.

At United Business Communications, we have the right data modem for you. You get a product reliability, application support and backup capability that, we believe, offers you the best overall value.

With our subsidiary company, Risco Electronics, we have a reliable, continuous source of low cost, high quality, 1800 to 9600 bps data modems you can purchase, lease or rent.

And, we have the experience of our data modem specialists to help you choose the best possible application of our data modems to your needs.

So, no matter how demanding your data modem needs, you can rely on UBC.

For more information, contact UBC. We'll be glad to help you choose the right data modem, the right company.

UBC



June 2, 1971

Random Notes

Cross-Compilers Available From Developer or T/S Net

WALTHAM, Mass. — A series of cross-compilers allowing IBM 360s to serve as host machines for development of programs to be run on other CPUs are available from Softech Inc. for in-house use or from National CSS on a time-sharing basis.

A compiler for the Honeywell 16 minicomputers costs \$6,000 plus \$600/mo. Packages for the IBM 1130 and the Raytheon 700 are priced at \$4,000 plus \$500/mo. A PDP-10-oriented compiler is available for a single \$8,000 fee, Softech said from 391 Totten Pond Road, 02154.

Interactive Record Retrieval

Managed by Cyphernet Program ANN ARBOR, Mich. — Users of the Cyphernet time-sharing network are able to manipulate tabular data bases with the Recall Information retrieval system. The system provides for the collection, analysis, locating and listing of records through an interactive dialog with the user.

Recall can be used in connection with several other application programs in the Cyphernet library, the company said, to provide even broader capabilities against the data base. The network is at 333 Maple Village Center.

Westinghouse System Simplifies Patent Processing, Payments

PITTSBURGH — Managers of patent processing departments can control their operations through a single data base created under the Patent Information Management System (Pims) from Westinghouse Tele-Computer Systems Corp.

Pims reports the backlog of each attorney and each patent committee. It also reports actions needed to meet deadlines and provides for the release of payment of foreign fees and taxes. WSTC is at 2040 Ardmore Blvd., 15221.

IBM's 'Pails' Converted to OS

SAN FRANCISCO — Insurance companies can run IBM's Property and Liability Information System (Pails) in an OS/360 tape-oriented environment through a conversion service from American Information Development (AID). Normally, Pails operates under DOS and uses data cells, AID said.

By converting a Pails installation to OS, performance can be improved by a factor of seven, according to the company. AID, at 48 Peter York Way, charges \$50,000 for conversion of the Pails package as received from IBM before any customization.

City Bonds Added to 'Monitor'

CHICAGO — Automatic pricing of municipal bonds has been added to Mergin Monitor, the on-line management service for banks, from Bank Computer Network Corp. (Bankcom). With the enhancement, banks obtain current valuations as they enter the bonds, and "transparent" updating of the files thereafter.

The basic Mergin Monitor provides users with price information on 20 stocks and corporate bonds at the most recent closing prices. The data is generally used to evaluate investments being held as loan collateral, the company said from 333 N. Michigan Ave., 60601.

XDS Says New Version Will Improve UTS

By Don Levitt

CW Staff writer

EL SEGUNDO, Calif. — The first version of the Universal Time-sharing System (UTS) has been distributed to some Sigma 7 users by Xerox Data Systems, but the value of the operating system appears to be in doubt.

Private users generally seemed pleased with the capabilities they expect to get from the system, but in fact none of those contacted by CW had UTS on an

operational status. The time-sharing networks, whose needs are admittedly more severe than the in-house users, are still dissatisfied with what XDS has delivered. XDS is also unsatisfied with the present situation. Apparently in reaction to stories of XDS' problems with the first version, the company announced that a second version would be available by the end of the year.

The improved version will include a multiprogramming feature, for handling

multiple batch programs, and a number of operational and performance enhancements to its file management capabilities, according to XDS.

In addition to providing more capabilities, the second version of UTS is expected to use less core than the current version. XDS said that it will be operable on machines with a minimum memory of 65K words, in contrast to the 81K words required now.

It is in the area of file management that UTS has been most severely attacked. Users who have looked at the logic or tried to use it noted that it uses a "linear" approach to indexing.

One of the enhancements planned for the second version is said to be multi-level keying capability, similar to that available under the latest version of XDS Batch Timesharing Method (BTM).

Other features XDS expects to add to UTS are support for file devices with extended sector size, and accessibility to "private" disk pack volumes, under a built in security system.

'Platform' Developed by Monitor For Teleprocessing Applications

DALLAS — IBM 360 users building teleprocessing applications have another monitor system from an independent developer to consider: the On-Line Platform Extension I (O-Plx I) is available from Omnic Corp.

Described as similar in function to IBM's Customer Information Control System (Cics), O-Plx I is said to provide users with a basic on-platform, on which they can build applications packages without regard to the teleprocessing environment. IBM's Basic or Queued Teleprocessing Access Methods (Btam or Qtam) do not have to be used with O-Plx I, the company said.

Users may write their application programs in any languages including Cobol or PL/I, and issue CALLs to handle the I/O for the terminals. O-Plx I will support any type of terminal, Omnic said.

O-Plx I is said to provide users with a basic on-platform, on which they can build applications packages without regard to the teleprocessing environment. IBM's Basic or Queued Teleprocessing Access Methods (Btam or Qtam) do not have to be used with O-Plx I, the company said.

IBM's 2260, a spokesman said.

The platform system includes logic to control the sequence of execution of application modules. O-Plx I is said to use a multi-region tasking approach in the scheduling, dispatching and monitoring of the program segments used in response to messages from the terminals.

O-Plx I is written in Assembly Language and operates under OS/360 in MFT or MVT environments. The core storage requirements vary with the applications and with the degree of efficiency desired.

O-Plx I should be customized to the user's needs, thus the company provides on-site consultation before designing the system. Typical system lease prices may range from \$1,000 to \$5,000/mo, according to Omnic. The company is at 500 South Erway, 75201.

'Compu-meter' Measures RJE Jobs

HAUPPAUGE, N.Y. — A revision to the Compu-meter system accounting package allows its operation in a remote job entry environment under IBM's Power spooling system, according to the Compu-meter developer, Computing Efficiency, Inc.

Compu-meter is used under DOS/360 to record and allocate the utilization of hardware, software, and personnel resources, and to report the degree of effectiveness with which the resources are utilized.

Power has also recorded device utilization statistics, generally on a disk file, but has not provided software support to put the data into report format for analysis. The data has, in effect, been available but not without programming effort.

With the change in the Compu-meter system, DOS Power users will be able to accurately account for system utilization both for batch jobs and those entering the system through remote terminals. The

Compu-meter reports have been adapted to show the statistics for the unit record devices or terminals supported by Power.

The basic Compu-meter system costs \$3,700. The Power remote job entry option is \$1,000.

Computing Efficiency Inc. is at 175 Engineers Road, 11787.

Contour Plotting Software Works From Control Points

AUSTIN, Texas — Users of IBM 360/65 or similarly large scale computers equipped with graphic output capability can use the verb-oriented Contour Plotting System (CPS-I) software package from Unitech, Inc.

CPS-I has been installed on CDC 6600, IBM 360/65, GE (now Honeywell) 635, and Univac 1108 CPUs at costs as low as \$8,500.

Unitech Inc. is at 1005 East St. Elmo Road, 78745.

IMI Teaches Cobol Debugging, Adds Manual, Data Generator

SAN FRANCISCO — Cobol-oriented installations can gain insight into the basic concepts of program debugging, and operational tools to implement the concepts, with a combination of items from Information Management Inc. (IMI).

Grouped together under the name Cobol De-Tester are a test data generator (TDG-II) software package, a Cobol debugging manual, and a four-day course at the user's site, on debugging tools and techniques.

The parameter-driven TDG-II creates test files from an analysis of the source program. The user is permitted to structure his parameters so that logical errors will be included in the test files. In this way, the company said, the error routines in the user's programs can be checked out.

The debugging manual reviews basic techniques for program checkout, but is tailored to reflect any standards the user has established, in terms of documentation, data and procedure names.

By holding the training sessions at the user's site, IMI said that topics covered can be more easily related to real problems. The course is said to describe the creation and use of test data in the programming, operations, maintenance and quality control environments. Too often, programs are tested in detail but the other elements of the DP operation begin without any dry run, IMI said.

The TDG-II program is written in Cobol and operates on the Univac 494 or on IBM 360s, under OS. It requires 90K bytes of core on the 360, according to IMI.

The complete Cobol De-Tester costs \$7,500. The TDG-II can be purchased separately for \$4,000. Information Management Inc. is at 447 Battery St., 94111.

WANT SOFTWARE FOR SYSTEMS MEASUREMENT? CHECK THE ADDITIONAL FEATURES AND LOW PRICE OF OUR OPERATING SYSTEM MONITOR

FOR TUNING S/360 AND S/370 OPERATING SYSTEMS
20% to 40% PERFORMANCE IMPROVEMENT TYPICAL

Contact Larry Melton



Horseshoe Man Educators
Financial Security

216 East Monroe Street
Springfield, Illinois 62701
(317) 644-3481

Package Generates, Formats Cobol Source Programs

LYONS, Ill. - Cobol programmers working in a DOS/360 environment are said to have an easier time developing programs while getting standardized source listings, with the Cblshort precompiler from General Electronics.

The package is said to expand

user-chosen and system-supplied abbreviations in full Cobol data or procedure names and reserved words. This use of a shorthand approach can cut sharply into the amount of time needed to code and keypunch source programs, the company said.

Programmer supplied abbrevia-

tions can be used anywhere in the program. Each abbreviation may be restricted as to the division in which replacement is to be made. The abbreviations and restrictions are supplied at execute time.

A reformatting capability can reorganize data and procedure division entries so that they conform with required margins and show the logical dependence of subsidiary data fields or instruction sequences.

The Cblshort package allows the user to reformat, punch a new source deck, compile, catalog and execute a program, all in a single pass. The system can be used for programs compiled under Cobol D or F, and all required job control statements are generated, the company said. Users are given the option of

selecting either tape or disk for a work file when the compile option is requested.

The realignment of key words and logically dependent statements can be applied to a user's existing source programs and is not restricted to decks specially

prepared for use under Cblshort. Thus, a user's entire library of program listings can be made to follow a single standard of documentation. Cblshort is available in either source (\$500) or object deck (\$150) form from P.O. Box 79, 60534.

ATLAS AUTOMATED TAPE LIBRARY ACCOUNTING SYSTEM

com. patic tape library accounting system available at any price.

Other 360 users • Increased record keeping efficiency • Reduced operating cost

IBM/360 and up IBM/360, OS 360/360 charge at source level.

GTE DATA SERVICES

Another service for better management from GTE

A part of General Telephone & Electronics

Call or write Atlas: ATLAS P.O. Box 1546 • Tampa, Fla. 33601 • Phone (813) 877-8031

System Manages Cash Flow, Finished Goods Inventory

PHOENIX - Management can have integrated control of finished goods inventory and cash flow with the Accounts Payable/Receivable/Inventory Library (April) from Western Data Sciences Inc. With April, each entry is carried through into all the appropriate files.

WSD said.

The system is designed to manage finished goods, inventories of up to 33,000 items and receivables files of the same number of customers. Purchasing and accounts-payable records can be managed for all active vendors, the company said.

In addition to full reporting capabilities, April is said to produce invoices, customer statements and voucher checks on demand.

Inquiries can be made against individual item or customer files, and complete audit trails of all transactions are maintained by the system. Users can maintain open item files for the receivables application, according to WSD.

Available for either time-sharing services or users with in-house CPUs, April is provided in source language for on-site modifications.

The present version of the package is written in Fortran IV, Level II, and has been implemented on the IBM 360, Burroughs 5500 and DEC PDP-10. In each instance, some form of random access device is required for the files. The amount of core storage needed depends on which of the applications have been installed, and how large the files are.

New versions are being written in extended Basic for use on Hewlett Packard systems, the company said, and an RPG-III version for IBM's S/3 is also in development.

In-house users can acquire April for a one-time charge of \$2,000. The user is free to install April on multiple sites of his own, but may not resell the package, a service based on the package's capabilities.

Western Data Sciences Inc. is at 5055 N 12th St., 85014.

MAC Cross-Assembler Designed for OS/360

LOS ANGELES - Programs for the Lockheed MAC minicomputer can be assembled on IBM 360s operating under the OS with the Leap 360/OS cross assembler from Lockheed Electronics.

The package is said to operate up to 400 times as fast as the previously available 'Leapfort' cross-assembler that operated on any computer having Fortran capabilities.

By using a cross-assembler, the mini-computer dedicated to an application need not be disturbed for the first stages of program development. Nor does the user have to acquire additional peripherals or memory that might be needed just for the assembly of new programs, a Lockheed spokesman said.

Programs assembled on a larger host machine are often more compact and efficient than those assembled on the mini. Leap 360/OS provides a virtually unlimited list of symbols and does away with the need to segment large programs, he said.

The OS-oriented 'cross-assembler' sells for \$1,000 which includes a one-year warranty. The Leapfort package sells for \$300 and a third cross-assembler, Leap 360/DOS, costs \$500. Lockheed Electronics is at 6201 East Randolph St., 90040.



Here's one way to order and SAVE! Use this Wright Line Reminder as an order form. Send this to us alone or with your formal order and all items requested will be shipped F.O.B. delivered. More than 500 data processing accessories are shown in the Wright Line 1971 Catalog. Write today for free copy.

Stands for CRT display terminals, micro-film readers or typewriters



Available in 23" and 36" widths

- Indicate color wanted:
- ☐ Charcoal grey with off-white top
 - ☐ IBM blue with off-white top
 - ☐ NCR tan with gunstock-walnut top

MODEL	NO.	PRICES	QUAN.	TOTAL
		1-10 11-25 26+		
23"	2223-10	\$75.00 67.50 62.50		
36"	2236-10	\$95.00 87.50 87.50		

A handy truck for moving trays, forms or cards can save time



With 2 fixed, 2 swivel 4" casters for easy maneuvering

NO.	PRICE	QUAN.	TOTAL
1538-10	\$75.00		

Carriage tape holders provide orderly, convenient storage



5810-11 Cap. 40 tapes

5810-12 Cap. 40 tapes

NO.	PRICE	QUAN.	TOTAL
5810-11	\$19.25 ea.		
5810-12	\$77.00 ea.		

Safe storage of disk covers at the drive



1311-10 for 1311 cover on drive

2316-10 for 2316 covers fits on 2314 drive

NO.	PRICE	QUAN.	TOTAL
1311-10	\$17.50 per 2		
2316-10	\$25.00 ea.		

Company: _____ Order No: _____
 Address: _____
 City: _____ State: _____ Zip: _____
 Individual Issuing Order: _____

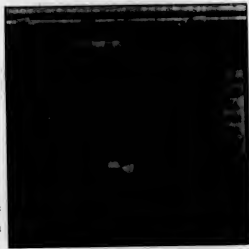
WRIGHT LINE • 160 GOLD STAR BLVD., WORCESTER, MASS. 01606
 A DIVISION OF BARRY WRIGHT CORPORATION

PRIVATE LINE DATA MULTIPLEX

What do you get for the money you spend?



TAKE A LOOK AT DIGINET-160 PRIVATE LINE MULTIPLEX--- THE ONE WITH THE BIG PLUS!



In terms of design, features and performance, DigiNet-160 Private Line Data Multiplex is second to none---and it's priced right too! Up to 17 terminals can have their own "private line" to the computer---even though they share a single telephone line * speeds to 600 bps * complete channel speed intermix capability * no data set required (interfaces directly with your telephone line) * channels are fully speed and code transparent * fully automatic * flexibility in mounting (rack mounted shelf, multi-channel cabinet, single channel cabinet)---just some of the features you get with a DigiNet-160 system.

THE BIG PLUS

It's called "GEBITS" (General Electric Built-In Testing System) and it represents the end to "Service-man Roulette" when a computer port goes bad, a telephone circuit goes out, or a terminal acts up! The built-in GEBITS circuitry (patent pending) of the DigiNet-160 lets you pin-point the problem area in short

order and call the right serviceman every time---and it doesn't require a technically trained person to use. GEBITS test procedures are as simple as pushing a button or throwing a switch---and will help you get back on-line in minimum time---and with-

out running up charges for "false alarm" service calls.

Get the complete DigiNet-160 Private Line Data Multiplex story from any of the following:

R. G. E. Hoffman
625 Delaware Avenue
Buffalo, N. Y. 14240
(716) 883-9210

M. E. Donlon
177 Columbia Turnpike
Florham Park, N. J. 07932
(201) 377-0720

D. A. Miles
Suite 821, Wyatt Bldg.
777 14th St., N.W.
Washington, D. C. 20005
(202) 393-3600

F. A. Duran
999 Elmhurst Road
Mount Prospect, Ill. 60056
(312) 255-3200

R. W. Dunn
6300 Hillcroft-Suite 617
Houston, Texas 77036
(713) 771-5334

G. W. Brennan
2154 N. E. Broadway
Suite 110
Portland, Ore. 97232
(503) 228-0281, Ext. 237

J. M. Burt
P. O. Box 4778
Sacramento, Calif. 95825
(916) 927-0163

R. J. Chapple
3636 - 5th Avenue
P. O. Box 3337
San Diego, Calif. 92103
(714) 297-2911

Mountain View Road
Lynchburg, Va. 24502
(703) 846-7311, Ext. 429

W. G. Packham
125 Tycoos Drive
Toronto 395, Ontario, Canada
(416) 789-3281

DATA COMMUNICATION PRODUCTS DEPARTMENT
GENERAL ELECTRIC COMPANY, LYNCHBURG, VIRGINIA 24502

GENERAL  ELECTRIC



COMPUTERWORLD

communications

Carriers Oppose FCC Ruling

NEW YORK — Three groups of common carriers have filed requests that the U.S. Court of Appeals for the Second Circuit stay the FCC's decision in the computer inquiry, but a separate court order may delay arguments on the appeals.

The requests were filed by General Telephone, United Telephone, and United Telephone and the United States Independent Telephone Association.

Under the FCC decision, a common carrier can provide data

processing capabilities for outside use only through a subsidiary that is wholly separate from the carrier operations. The DP subsidiary must not include the carrier's name.

The telephone companies have been supported in their appeal for a stay of the FCC decision by Western Union Telegraph Co.

In late March, two GTE subsidiaries, GTE Service Corp. and GTE Data Services Inc. filed appeals with the same court to clarify some of the language.

By the CW Technical Staff
WASHINGTON, D.C. — Private line data users appear to be taking an active interest in the proposed AT&T tariff change that would require "Connecting Arrangements" (CA) on some voice grade private lines. [CW, May 19].

In addition to writing letters of objection to the Federal Communications Commission, some data users at the recent SICC signed letters to the common carrier bureau at the International Communications Corp. (ICC) booth.

At issue is a proposal by AT&T scheduled to take effect July 1, which would require CAs on private lines tied to non-Bell data equipment. The FCC has not yet acted on the proposal, originally scheduled to take ef-

fect last July but postponed one year at AT&T's request.

The ICC form letter noted that non-carrier equipment has been attached to private lines for ten years without connecting arrangements. The burden of proof that such practice is harmful to the telephone network must be placed directly on AT&T, the letter said. It added that the carrier has not yet produced such evidence.

Even if the possibility of harm to the network is established, the letter continued, any decision to require the CAs should be delayed until the Electronic Industries Association completes the definition recommended by the National Academy of Science study of interconnection. An FCC spokesman told CW that five users of private lines

have thus far sent their positions on the proposed connecting arrangements for the commission. They are Telecommunications Inc., International Communications Corp., Computer Peripheral Manufacturers Association, Willard Laboratories Inc., and Allied Stores.

Codex Corp. has also filed a strongly-worded formal protest with the commission. In its letter, Codex told Chairman Dean, Burch that it was objecting to the "premature implementation" of the tariff changes as much as to the reasons AT&T has given in support of the proposal.

An industry source told CW that Bell may ask for an additional postponement beyond July 1 to implement the connecting arrangements.

BETTING WITH WILLARD IS LIKE HAVING YOUR OWN TWO-HEADED COIN!

Heads you win—tails nobody loses.

Here's the bet. Buy one Willard 7-inch Model 9081 tape unit at the unit price of \$2,400.* Test it for 60 days against any other make—in the lab, in the field, in your computer or system.

Give it hell!

If you show us that the Willard tape unit is less reliable and maintainable than the best competitive unit, we'll cheerfully refund your money.

If you lose the bet you really win! Because you will have found

a more reliable and serviceable tape unit that costs less and has many features previously found only on bigger, more expensive units.

Here are some of the many features:

- Guaranteed IBM compatibility.
- 12 1/2 ips operating speed.
- 125 ips rewind.
- Guaranteed, no thrown loops if power fails, even during rewind.
- Unattended power fail/restart option.
- Two year service warranty on electronics to OEM's.
- Excellent OEM discounts.
- Only 8 1/4" high by 19" wide.

Is it really a gamble when you can't lose? Order your Willard today.

* Sorry — this offer is not extended to our competitors.

Willard Laboratories, Inc.
Telephone (213) 821-8026

**GOOD DESIGN
IS NOT
EXPENSIVE.**

YES. I WANT TO BET!

I'll take that bet! Send me your specs. I understand that if my data shows your unit to be less reliable and maintainable than the best competitive unit, I can return the unit in good condition along with the data within 60 days. You will immediately refund our money.

company name _____

company address _____

attention of: _____

title _____

Our estimated requirement is _____ units per year.



Willard Laboratories, Inc.
Peripheral Equipment Division
4221 Redwood Avenue
Los Angeles, California 90066

Data Briefs

WU Forms DP Subsidiary Along FCC Guidelines

NEW YORK — A new subsidiary of Western Union Corp., Teleprocessing Industries Inc. (TII) will develop and acquire nonregulated data processing operations including time-sharing facilities and application programs to support specific industries. Facilities management is another capability to be provided, the company said.

The formation of TII has separated data processing from WU's common carrier operations, as required by the FCC computer inquiry decision. The omission of the carrier's name from the new company also reflects the commission's ruling.

CCI Units Sold to Replace Teletypewriters, IBM 2700s

CULVER CITY, Calif. — Users can replace teletypewriters with a portable display terminal, the CC-335, from Computer Communications Inc. The same company can provide a replacement for IBM's 2700 series transmission control units.

The CC-70 computer communicator is said to be completely compatible with the 2701, 02, or 03 at about half the cost of the IBM units.

The CC-335 Totemcom terminal is compatible with teletypewriter-oriented programs, and I/O formats, the company said, but transmits at up to 1,200 bit/sec. CCI is at 5933 W. Slauson Ave., 90230.

ICC Modem Eases Equalization

MIAMI — One operator can equalize a full communications circuit from one site with the simplified, one-manual equalization that is part of the Modem 4600/48 data set from International Communications Corp.

The 4600/48 uses four-phase, two-amplitude modulation to provide 4,800 bit/sec data communication. It costs "under \$5,000" from 7620 N.W.

Tycom Adds Originate-Only Set
POMPTON LAKES, N.J. — The Tycom 800 Data Set, a Bell System 103 compatible, originate-only, full duplex device, is available from Terminal Equipment Corp. as a printed circuit board modem or complete with acoustic coupler.

The printed circuit board version sells for \$69, while the acoustic coupler sells for \$99.50, including housing, power supply and carrier indicator lamp. The firm is at 750 Hamburg Turnpike, 07442.

June 2, 1971

Bits & Pieces

Packs for 3330 Announced
By Caelus for November

SAN JOSE, Calif. — A high density disk pack capable of handling 200 tracks/in., with a transfer rate of 0.5 Mbit/sec, developed by Caelus Memories, is scheduled to be available to users of the IBM 3330 disk drive as a substitute for the IBM 3336 pack. The disk has an estimated amplitude that the company believes will be compatible with the IBM unit using "prototype" test heads. The mechanical construction of the Caelus pack, the company said, is based on specifications that have been established for several months.

The Caelus version of the 3330 disk is scheduled to be available in November 1971. Specifications can be obtained at 807 Mabury Road, 06133.

Corning Withdraws 904 Terminal,
Promises Users Will Not Suffer

CORNING, N.Y. — Corning Glass Works has announced that it is withdrawing its Corning 904 interactive graphics computer terminal from the marketplace due to slow sales.

The Corning device was unusual in its use of photochromic glass and a xerographic copier. The unit price of \$19,850 included copier and software interface.

Company spokesmen said that the dozen or so customers who have bought or leased Corning 904 terminals will be offered several alternatives to assure that they will not be adversely affected by the product withdrawal.

EPI 18-bit Word Minicomputer
Features 900 nsec Cycle Time

ENGLEWOOD, Calif. — Intended for use in process control applications, the EPI-118 minicomputer from Electronic Processors, Inc. has a 900 nsec cycle time and is expandable from 4K to 32K 18-bit words.

The mini has four hardware registers and uses MSI throughout. With selected peripheral interfaces, the basic 4K system sells for \$5,900 and is delivered within 30 days from 5050 S. Federal Blvd., 80110. Generates 64 Repeatable Levels.

CHELMSFORD, Mass. — A graphics-oriented COM unit designed to be used for applications such as image enhancement, computerized animation and type font generators, the P-1500 Photowrite from Optonics International, Inc. can generate 64 repeatable grey levels.

The device can record up to 80,000 point/sec on high speed film and can produce photographic transparencies as large as 8 in. by 10 in. Input can be either an on-line interface to a minicomputer or from magnetic tape. The P-1500 is priced from \$30,000 to \$35,000 and is available on a 60- to 90-day delivery schedule from 7 Stuart Road, 01824.

Jet-1232 Makes 1/32 in. Shreds

FREEMONT, N.Y. — The Jet-1232 paper shredder from Shredmaster Corp. is equipped with a 3/4 hp motor and can produce 1/32 in. shreds from paper 10 in. wide. The desktop device is priced at \$595 and is one of seven models offered by the company ranging in price from \$265 for portable units to \$3,150 for floor models. Delivery is from stock for most models from 891 South Ocean Ave., 11520.

High Cost a Drawback

Distributed System Cuts Load on CPU

By Malcolm L. Stiefel

Special to Computerworld

As the name implies, distributed data processing involves the dissemination of processing tasks among several interconnected units, which exchange information on demand and/or on schedule, depending on the application.

What's new about it? Nothing, really. The small processors that control communication networks on behalf of large systems operate in an elementary distributed system.

But in these cases the delegation of tasks is minimal. The big computer stores the data, updates the files, generates the printouts, prepares the output messages for transmission. The little computer checks parity, does serial/parallel and parallel/serial conversion, identifies start and end of messages, and so on.

In a common commercial application, branch offices gather their data (hours worked, sales, orders, and so on) during the day and ship it to headquarters at night, where it is operated upon. The next day, or week, or month, depending on the system cycle, each branch receives back a summary report of its operations.

Errors are corrected as quickly as possible, usually on a daily basis. But some kinds of errors cause processing delays. In a distributed system, the delays would disappear and telephone line charges would go down. Each branch with its own small system would produce a report, detect its own errors, and transmit correct, up-to-date summaries to headquarters, at regular intervals. The small central computer would do much less work than its predecessor, since less work would be distributed to the branches.

A distribution of work would imply a distribution of data, as well. If a com-

pany's inventory is centrally maintained, each branch could receive its own "copy" of the inventory file, or updates to the inventory files, once each day, so that orders can be placed during the day without interrupting the main office.

At night, each branch would report its orders, the central file would be updated, and the process would begin again. Under a variant of this process, each branch could be allocated a portion of the inventory reserved for its own use, to avoid contention between branches.

These things are done today, but the data is distributed on paper, feedback to the central file is slower, the error-detecting and error-correcting load is bigger and slower, and system effectiveness is hampered.

Too Costly

Then why doesn't everyone have a distributed system? Right now, for one thing, it's too expensive. All of the hardware there, but the cost of 100 branch systems is probably 10 times the cost of one central system plus telephone charges.

DEC PDP-11 Used as CDC Front-End

MAYNARD, Mass. — By making use of software packages developed by a DEC user, the DEC PDP-11/20 will operate as a front-end processor to CDC 6000 and 7000 computers.

The configuration, called the BT11-A consists of the processor, 400 card/min reader, 245 to 1,101 line/min serial printer, and interface to a Bell 201 modem.

The system forms an intelligent terminal for such applications as off-line program development, data acquisition or arith-

Moreover, the smaller, cheaper systems usually don't have the software support afforded the larger ones, mainly because the little ones don't have enough main memory to hold a sophisticated, efficient compiler.

But don't give up hope. In the last few years, programmable terminals have arrived on the scene. Essentially, they consist of a keyboard coupled with a CRT or a printer or both, with a mini.

When the inexpensive components become available, system designers will have a new degree of freedom but a new set of headaches. How much computing power goes to the outlying districts and how much stays in the executive suite?

In many situations, the profitability (time period of validity) of data will be short, and the probability of access to a given item by any remote users will be high; this would call for a centralized data base or a highly developed system of updating distributed elements.

Malcolm L. Stiefel is an independent systems and data processing consultant specializing in municipal information systems.

metic functions as well as the normal batch operations.

Detailed specifications on the software are not yet available. DEC said, because the packages are still being developed.

The software will be available through the Decus user group later this year, DEC added.

The basic configuration of the BT11-A is \$35,000. The terminal is available on a three- to four-month delivery schedule through DEC's Computer Special Systems group.

IBM Offers Special 1403 Train
To Print ALA Library Material

WHITE PLAINS, N.Y. — An indication that IBM is becoming aware of the specialized needs of some users is the availability of a 1403 printer train cartridge intended for libraries to prepare catalog cards and catalogs.

Using a font similar to the Bookman font, the train is capable of reproducing any Roman alphabet language or any language that can be transliterated into Roman letters, IBM said. The graphics duplicate those appearing on Marc (Machine Readable Cataloging) magnetic tapes issued by the Library of Congress.

Called the American Library Association (ALA) arrangement, the train cartridge can be used on any 1403 model 3 or N1. Either the Universal Character Set or Multiple Character Set option is required.

The 162 graphics include upper and lower case Roman characters; regular subscript, and superscript Arabic numerals; Roman characters not appearing in English; diacritical marks, and special characters.

Print speed will vary depending on the characters being printed. A minimum rate of 310 line/min is attained except when printing diacritical marks over and/or under alphabetic character.

The ALA cartridge will be available in June 1971 at a rental price of \$97/mo or can be purchased for \$2,910.

The new cartridge is the first special purpose cartridge that has been offered by IBM. Prior to this, the company has limited itself to train configurations that were of more general interest.

In addition to two standard 48-character set units, two different sets of preferred characters are offered. Users of data processing languages are served with three different combinations for PL/I and one for Cobol or Fortran.

Three different cartridges are aimed at users of various OCR fonts. Two text-printing chains, with upper and lower case characters, are available. The first of these is intended for the commercial users and the second for printing scientific material.



Novar terminals can be equipped for automatic detection of errors caused by noisy phone lines — and for automatic correction by retransmission. Assures that only correct data goes to the computer. Models 5-50 and 5-51.

NOVAR

Novar Corporation • 2378 Charleston Road
Mountain View, Calif. 94040 • (415) 964-3900
Offices in Principal Cities

613 INFORMATION SYSTEMS

An Introductory Offer to Computerworld's New Information Service (Digesting Over 150 Publications)

□ There are over 150 trade publications which report on the computer industry. Most people involved in the industry find it a struggle to review more than six.

□ Computerworld's new information service, "Computa-Data", provides you with the most modern method of reviewing all 150 publications, in less time than you spend on six.

□ By subscribing to CW's Computa-Data (Monthly Profile Update), you will receive a computerized report every month containing detailed digests of each article of specific interest to you that has been published in the 150 leading trade publications during the past 30 days.

□ How do we know what's of interest to you? You tell us, by either checking one or more of the Profile subjects described below, or by writing to us and outlining your special interest. The CW computer system does the rest, by reviewing the thousands of articles input each month and selecting for you only those articles you would have selected for yourself to read. Those selected articles are then printed by computer in a convenient 8½x11" Report, bound, and mailed to you. Every Profile issue is indexed, cross-referenced and source-documented.

SPECIAL INTRODUCTORY OFFER (Three issues for \$25)

□ To help introduce you to this exciting new service, you are invited to accept a three-month trial subscription.

□ For a total of only \$25 you will get three full issues, packed with data on new products and developments, contracts, new services, competitor's activities, new applications, legislation, trends and forecasts, and a host of other vital data. If you prefer, you may order a one-year subscription—twelve issues—for \$100. Either way, satisfaction is guaranteed or your money will be refunded.

Group I New Products and Applications

The data offered in these Reports and Profiles describe new products being offered to and by the data processing industry. Included are applications for these products as well as new applications for existing products. Reports include names of suppliers; users who have developed new applications for products; new general developments in the field.



(Circle No. on coupon)

- 1 Computers & Minicomputers
- 2 Terminals
- 3 Software
- 4 Components
- 5 Supplies
- 6A Input Devices
- 6B Services
- 6A Peripherals (other than terminals and input devices)

Group II Installation Contracts

This Profile deals with the granting of data-processing contracts. Included are contracts for hardware, software, and peripherals. The information reported includes, whenever available, the names of the companies involved in the contract; a statement of the proposed work; the length of the contract; its proposed start-up date, etc.

(Circle No. on Coupon)

7 Installation Contracts



(Circle No. on coupon)

Group III Industry News

(Circle No. on coupon)

- 8 EDP Mergers & Acquisitions
- 9 New Companies & Services
- 10 EDP Activities & Trends
- 10A Foreign Marketing Trends & Forecast
- 10B Corporate Data (financial & marketing activities of EDP companies)

Group IV User-Markets: Developments and Applications

Data-processing developments and applications for specific markets and uses of available products (hardware, software, services, etc.) are highlighted in these Reports and Profiles. Included are data detailing how the product is used for specific jobs; its value to specific user-markets; users of the product; companies offering the product; availability of the product; components of packages for user-markets.



(Circle No. on coupon)

- 11 Accounting
- 12 Banking
- 13 Insurance
- 14 Military
- 15 Communications
- 16 Medical/Hospital
- 17 Data Processing
- 18 Transportation/Reservations
- 19 Financial
- 20 Information Transfer
- 21 Education
- 22 Law Enforcement
- 23 Legal
- 24A Government
- 24B Pollution Control

Group V Reports and Profiles for Specific Job Titles

These Reports and Profiles contain data of interest to people with specific responsibilities in the field of EDP. They deal with developments in data-processing which have a direct bearing on the type of work performed in these positions.

(Circle No. on coupon)

- 25 EDP Managers
- 26 Programmers
- 27 Systems Designers
- 28 Time-Sharing Managers
- 29 Librarians
- 30 Corporate Executives (Including MIS data)

Group VI Personalized Reports and Profiles

If you do not see the exact subject you need, please call or write to us and explain your exact needs. There is no extra charge to have a unique Profile made up to your personal specifications.

You may order Profiles on such subjects as company activities, specific products or markets, or almost anything else having to do with the computer industry.

An "ISD System" Information Service

Mail To:

CW-International Systems Design, Inc.
2175 Lemoine Ave., Fort Lee, N.J. 07024

For information or to place an order by telephone, call:
CW Editor
(201) 947-4113

Please send me the Monthly Profiles I have circled below. I understand that any Profiles I am ordering can be returned within 15 days for full money-back refund.

- ☐ 3-Month Trial (up to 3 circled subjects) - \$25. Each additional subject circled - \$5.
- ☐ 1-Year Subscription (up to 3 circled subjects) - \$100. Each additional subject circled - \$20.

1 3 5 6 7 9 10A 11 13 15 17 19 21 23 24A 26 28

2 4 6A 8A 8 10 10B 12 14 16 18 20 22 24 25 27 29 30

☐ Payment enclosed ☐ Bill my company ☐ Bill me

Name _____ Title _____

Company _____

Street Address _____

City _____ State _____ Zip Code _____

Hand-Fed Optical Mark Sense Readers Provide Low-Cost CPU Input Method

By Frank Plesta
CVP Staff Writer

Mark reading may be increasingly important as a source of future low-cost computer input thanks to several recently announced devices.

The units use an optical method of detection in contrast to the electrical system used on older equipment. This permits the use of almost any marking medium in contrast to the first such machines that required specially compounded pencils. The only restriction lies in the area of color, with some devices being made insensitive to a certain hue to allow input edit-

ing. Typically, the units are designed as desk-top devices that are hand-fed, eliminating the expense and complexity involved in document handling mechanisms. At least one unit available can use rolls of paper up to 12 in. wide, however.

The devices are designed to be used either on-line to a computer or communications network, or to record data read on magnetic tape.

Most readers can handle documents as large as 8-1/2 by 11 in., although one unit, the Dataterm 3 Mark Reader from Digital Re-

sources Corp., can handle paper as large as 18 in. by 12 in. The Dataterm 3 can scan up to 20 positions per page in various combinations of bits.

The unit is manufactured in England and distributed through the Hybrid Systems Division.

Another unit, the Decision, Inc. OMR 650 can scan up to 4,000 mark position/page, and also read punched cards.

The Opscan 12 and 17 from Optical Scanning Corp. are unusual in their ability to read handwritten block-printed numerals in addition to conventional mark reading marks.

The code read by the scanner is translated, according to the user's parameters, into either Ascii or Ebcidic by the machine. Self-checking mechanisms, such as the forms check in the Dataterm 3 that monitors the performance of electronics, before and after reading, insure that the data is read accurately.

With rated capacities of 200-300 document/hr, these devices are not intended for high speed input, but this is offset by prices that range from \$4,000 to \$8,000, making them practical for many users.

CRT Gains Off-Line Data By Adding Cassette Unit

LITTLE NECK, N.Y. — Hazeltine has added a dual magnetic tape cassette unit to its 2000 terminal resulting in a system that is said to have exceptional capability for on/off line data storage and retrieval.

The system, called the 2000+, uses the editing capabilities of the terminal and expands them to greater user benefits through the interaction of the cassette unit, the company said.

The system operates in two basic modes, paper tape emulation and page mode.

In paper tape emulation the system functions as a reader/punch. Data is recorded character by character as it is generated by either keyboard entry or from the CPU at speeds to 1,200 bit/sec. Recorded data may be played back and transmitted to

the computer through the terminal.

In the page mode, screens of data, consisting of one to 1,997 characters, are recorded, using the editing capabilities of the terminal's core memory buffer. Each page may be retrieved by the operator for review or transmission to the computer. Data transfer between terminal and tape is at 2,400 bit/sec. Either cassette may be selected by the CPU under program control for recording or playback.

The tape cassette unit may be commanded by either the CPU or the operator.

The Hazeltine 2000+ is priced at \$177,000 on a lease or at \$4,985 purchase. First deliveries are expected to be made in September, 1971 from Little Neck Parkway, 11362.

Core Enlarges 360 Memory

STAMFORD, Conn. — Add-on memories for the IBM 360/30, 40, and 50 from Data Recall, leased to users through Computer Investors Group, offer the user greater memory capacity than currently available from IBM.

On 360/30 and 50 models, the add-on unit is said to increase standard IBM mainframe capacity by 100%. On the Model 40, increased capacity is 75% above standard IBM equipment.

Total mainframe memory capacity of the Model 30 is increased to 128K bytes, the Model 40 is increased to 448K bytes, and the Model 50 to 1,024K bytes.

The add-on memories are directly addressable by the host computer logic. All CPU features and options can use the Data Recall memory.

The devices are said to be transparent to both IBM and user-supplied software and require no special operator considerations.

Typical annual savings provided by a leased 131K 360/30 processor, compared to an equivalent size Model 40, are \$38,000. When compared to a rented 147K 37/135, the annual savings are \$30,000, according to the company.

Installations of Model 30 and 50 expansion memories will begin in July, 1971. The Model 40 unit was first installed in March.

Software Agents

Expand your business by marketing ANCOM's highly-successful applications package under our lucrative commission plan. Large user base, literature, national advertising, local seminars, and leads furnished. Send description of capabilities and territorial interest.

Gary L. McMullen, President

ANCOM SYSTEMS

8829 South Sepulveda Blvd.

Los Angeles, CA 90045

213-648-1616

COMPUTERS NEED U.C.P.*

*UNINTERRUPTIBLE COMPUTER POWER

SYSTEM 700UCP PROVIDES

- VOLTAGE CONTROL
- FREQUENCY CONTROL
- TRANSIENT CONTROL
- LINE ISOLATION
- BRIDGES UTILITY POWER INTERRUPTIONS



Get the facts on

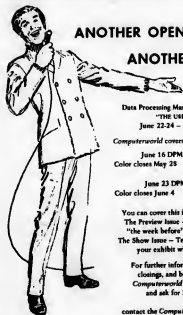
UNINTERRUPTIBLE COMPUTER POWER

Call Frank Wood (703) 355-2803

OR WRITE

POWER SYSTEMS & CONTROLS, INC.

P.O. BOX 27306 • RICHMOND, VIRGINIA 23261



ANOTHER OPENING...

ANOTHER SHOW...

Data Processing Management Association
"THE USERS SHOW"
June 22-24 - Houston, Texas

Computerworld covers DPMA with two issues.

June 15 DPMA Preview Issue

Color closes May 25 BW closes June 4

June 23 DPMA Show Issue

Color closes June 4 BW closes June 11

You can cover this important show twice.

The Preview Issue - Tells your audience

"the week before" about your exhibit.

The Show Issue - Tells your audience about

your exhibit while they're there.

For further information about rates,

cloning, and house lines - call

Computerworld at (617) 332-5406

and ask for Dorothy Travis

or contact the Computerworld representative

nearest you.

ANOTHER SHOW - COVERED

UK Students Tied Into University

CW European Bureau
LONDON—Over 100 terminals, Olivetti 308 SH, have been installed at strategic points throughout the UK for use by students of the Open University. The terminals, linked to a central computer in London, enable

students working on postal- and radio-based courses to feed in programs and other material and to receive the results immediately.

The Open University aims to bring graduate-level education courses to people who, by reason of age, location or other commitments, cannot attend a full-time university course.

Position Announcements

SALES/MARKETING

I am now seeking the following:

MARKETING MANAGER—Graphics for Printing Applications \$35,000

SALES MANAGER—1/0 equipment, Latin American market \$25,000

PRODUCT MANAGER—Type Drives, IBM compatible, \$22,000

REGIONAL MANAGER—Type Drives East and West \$19,000

SALES REPRESENTATIVE—Data Communications systems to Security exchanges, N.Y. \$20,000

SALES REPRESENTATIVE—CRT displays, data communications equipment, Cleveland, New York, Minneapolis, Boston, Chicago and Dallas \$20,000

SALES REPRESENTATIVE—Large Core Memory, New York, Philadelphia, Washington, others \$20,000

Call or write now to:
Mike Brumfi, Pres., B.A.I.

100 Northern Boulevard
Great Neck, N.Y. 11021
(516) 488-3232

SYSTEMS ANALYST

Programming background with 360 OS and familiarity with property and casualty insurance or PALS needed for this exciting opportunity. Positions available in both Los Angeles and Hawaii. Salary \$13 to \$18 K. Please send resume to: Al Strong.

CAREER DATA PERSONNEL AGENCY

3186 Wilshire Blvd.
L.A. 90010
Phone (213) 380-2200

SCIENTIFIC SYSTEM PROGRAMMER

Progressive manufacturer of electronic test equipment in the San Francisco Bay Area seeks a scientific programmer to program real time data acquisition applications on small binary computers. Applicant must have experience programming PDP-8 or PDP-11 or IBM 1130 computers. Experience in machine language for other computers desirable.

Please forward resume to Personnel Department, P.O. Box 1239, Oakland, California 94604. An equal opportunity employer.

E-H

Research Laboratories, Inc.

SENIOR SYSTEMS PROGRAMMER

The University of North Carolina Computation Center, at Chapel Hill seeks a Senior Systems Programmer with extensive background in OS/360 systems work. Benefits include excellent on-campus graduate computer science program and university town environment. Hardware includes a S/360 Model 50 and 1/2 of a shared S/360 Model 75 with tentative plans to upgrade to a Model 75 and S/370 Model 168 respectively. Experience in large scale system implementation is desired.

Send complete resume and salary requirements to: Mr. James J. Banner, University of North Carolina Computation Center, Chapel Hill, North Carolina 27514, not later than June 15, 1971. Availability date of July 15 is requested.

NSF Funds Urban Lab

WASHINGTON, D.C.—The National Science Foundation has funded the development of a computer-oriented laboratory to help train students in urban transportation problems at MIT. Key to the success of the lab is the use of a computer containing data representing real and hypothesized urban areas and computer programs that simulate the behavior of transportation systems.

Computerworld Sales Offices

Vice President—Sales

Neal Wilder

Sales Administrator:

Dorothy Travis

COMPUTERWORLD

797 Washington Street

Newton, Mass. 02160

(617) 332-6606

New England Regional Manager

COMPUTERWORLD

797 Washington Street

Newton, Mass. 02160

(617) 332-6606

Mid. Atlantic Regional Manager

Donald E. Fagan

COMPUTERWORLD

225 West 34th Street

Suite 1511

New York, N.Y. 10001

(212) 594-5644

Phila. Wash. D.C. District

COMPUTERWORLD

Suite 510

2021 "L" Street, N.W.

Washington, D.C. 20036

(202) 466-2630

Midwest Regional Manager

Bill Goodfellow

COMPUTERWORLD

Suite 218

25 East Chestnut

Chicago, Illinois 60611

(312) 944-5885

Los Angeles Area:

Bob Byrne

Shenwood/Byrne/Clarkson

& Associates

1541 Westwood Blvd.

Los Angeles, Calif. 90024

(213) 477-4208

San Francisco Area:

Bill Healey

Thompson/Healey Assoc.

1111 Hearst Bldg.

San Francisco, Calif. 94103

(415) 362-8547

Japan:

Mr. Naoyoshi Ando

Fuji Corporation

3-1, 5-Chome Yoyogi

Shibuya-Ku

Tokyo, Japan

Who Says People
Don't Read
Classified Ads

Buy Sell Swap

SALE/LEASE

RCA
Spectra 70/55G
Spectra 70/55H
IBM
360/65 I
360/65 J
360/30 F
Long Term Leases
Available on IBM 370

WANT TO BUY

360/40 G & H

CTI Leasing Corp.
4 Nevada Drive
New Hyde Park, N.Y.
(516) 488-1300
Attn: Dick Langton

\$\$\$ \$\$\$\$ \$\$\$\$

FOR SALE:
026's 077's 083's
402's 519's 085's

WANT TO BUY:
047's 419's 557's

CAC

1001 N. 1st St., Suite 201
Alhambra, CA 91801

410-414-1010

410-414-1010

FOR SALE ON IBM, M.A.

2540 - 1403 (02) - 7330 - 729

360 - 32K & 65K Systems

1401 Systems: 2311 - 2841

024, 026, 082, 083, 402, 407

WANTED

1403, 2821 (01), 1419 (01)

360 Systems, 1401 Systems

1419, 1402, 1406, 2311's

All Types Unit Record

Equipment

Call or Write

DATA AUTOMATION SERVICES

4858 Cash Road

Dallas, Texas 75247

(214) 637-6570

FOR SALE

COMPLETE H-200 SYSTEM

INCLUDES: 201 CPU WITH

16K (4) 20K TAPE DRIVES

READER/PUNCH, PRINTER

CONTACT:
STAN DOMALEWSKI
(201) 866-0500
PRINCIPALS ONLY
NO BROKERS

INTERNATIONAL COMPUTER BROKERS, INC.

Wanted - For Cash

360 Mod 40 - 128K or 256K

360 Mod 30 - 32K or 65K

1401 - Disk System

2821 Mod 1, 2, or 5

2841 and 3-2311 Disks

1311 Mod 2 Disks

IBM 370 Lease Financing

BUY SELL SWAP

WANTED IBM 360's

LEASE
SUBLEASE

If you are stuck with inadequate hardware, call us for a flexible alternative... we have high demand for what you're outgrown.

ALL MODELS AND CONFIGURATIONS REQUIRED

Luncheon & Associates

Valley View, Conn. (203) 466-2122

Valley View, Conn. (203) 466-2122

Valley View, Conn. (203) 466-2122

Valley View, Conn. (203) 466-2122

Valley View, Conn. (203) 466-2122

Valley View, Conn. (203) 466-2122

Valley View, Conn. (203) 466-2122

Valley View, Conn. (203) 466-2122

Valley View, Conn. (203) 466-2122

Valley View, Conn. (203) 466-2122

Valley View, Conn. (203) 466-2122

Valley View, Conn. (203) 466-2122

Valley View, Conn. (203) 466-2122

Valley View, Conn. (203) 466-2122

Valley View, Conn. (203) 466-2122

Valley View, Conn. (203) 466-2122

Valley View, Conn. (203) 466-2122

Valley View, Conn. (203) 466-2122

Valley View, Conn. (203) 466-2122

Valley View, Conn. (203) 466-2122

Valley View, Conn. (203) 466-2122

Valley View, Conn. (203) 466-2122

Valley View, Conn. (203) 466-2122

Valley View, Conn. (203) 466-2122

Valley View, Conn. (203) 466-2122

Valley View, Conn. (203) 466-2122

Valley View, Conn. (203) 466-2122

Valley View, Conn. (203) 466-2122

Valley View, Conn. (203) 466-2122

Valley View, Conn. (203) 466-2122

Valley View, Conn. (203) 466-2122

Valley View, Conn. (203) 466-2122

Valley View, Conn. (203) 466-2122

Valley View, Conn. (203) 466-2122

Valley View, Conn. (203) 466-2122

Valley View, Conn. (203) 466-2122

Valley View, Conn. (203) 466-2122

Valley View, Conn. (203) 466-2122

Valley View, Conn. (203) 466-2122

Valley View, Conn. (203) 466-2122

BUY SELL SWAP

SELLING YOUR COMPUTER

Tell us first, we have waiting lists of customers. Free appraisal.

ABLE COMPUTER CORP.

625 Bard Ave.

Staten Island, N.Y. 10310

212-273-3721

SALE

WHY GO TO 370?

Tremendous Model 40 & 50 Bargains

IBM 360/50H, July 71, 2 Selectors

Save Almost 300K

IBM 360/50 G, 2 Channels Plus

Decimal and Floating Point, 90 Day

Availability, 1401 Compatibility

IBM 360/40G, 2 Channels Plus

Decimal & Floating Point, 90 Day

Availability

Also 2540, 1403 N1, 2821, 90

Days, 185,000

summit

ACS

Sale or Lease

16K 1401 Tape Disk System

12K 1401 Tape System

7330 Tape Drives

16K 1440 System

80K 7080 System

ACS Equipment Corporation

8728 Spaulding Blvd.

San Francisco, CA 94128

Phone: (415) 731-0843

WANTED TO BUY

360/30F (1.5 mic.)

2540

2821

1403 N1

(3) 2311's

2841

SUBMIT ALL BIDS

IN WRITING

To CW Box 3393

60 Austin St.

Newtown, Mass. 02160

BUY AND SELL

IBM unit record

IBM computers

NCR 31 - 32 - 33 - etc.

BURROUGHS all models

MARION

403 BROOME ST., N.Y. 10013

(212) 966-5931

IBM SALE

SALE OR LEASE

024, 026, 056, 028, 058, 077, 080,

083, 402, 403, 407, 519, 552, 602A,

360 20, 2203, 2020, 2560, (2)

2311's

NEEDED

CASH OR SWAP

068-1, 048, ALPHA 066, 062

DP SERVICE INC

1800 N. Meridian

Chicago, Illinois 60650

312/774-2548

BUY SELL SWAP	BUY SELL SWAP	BUY SELL SWAP	BUY SELL SWAP	BUY SELL SWAP
WANT TO BUY IBM 360/40 196K (For Delivery Oct. 1971) IBM 360/40 128K (For Delivery July 1971) Two Selectors on Easy Compatibility Not Required Give complete Specs. and Price Principals Only. CW Box 338 80 Austin Street Newtonville, Mass. 02160	BUY-SELL-LEASE All Types IBM Computers & Unit Record THOMAS COMPUTER CORPORATION 32 N. CLINTON CHICAGO, ILL. 60606 (312) 829-7300	FOR SALE IBM 1620 SYSTEM 1620-20K C.P.U., 1622-C/R/P 1623-II - Additional 40K C.P.U. is Disk Adaptable Under Continuous IBM M/A Available July 1, 1971 Contact: CW Box 3392 82 Austin St. Newtonville, Mass. 02160	I.O.A. Immediate Availability FULLY RECONDITIONED IN OUR PLANT INSPECTED & APPROVED FOR IBM M/A 024, 028, 029, 056, 062, 083, 084, 085, 087, 088, 514, 519, 548, 552, 557, 532, 802, 803, ALSO DISC DRIVES, TAPE DRIVES AND PERIPHERALS I.O.A. DATACORP 81 Lafayette St., N.Y. 10003 (212) 675-0000 Ext. 10	370/360 In conjunction with the Company's 370 leasing program, CSA purchases pre-owned 360 equip- ment and peripherals either for short term leaseback, or immediate purchase and lease to other users. CSA's legal and financial staff will promptly nego- tiate and document all transactions. Companies interested in upgrading and obtaining 360 or 370 equipment may call J. Frank Kee- hane at (617) 482-4671. Computer Systems of America, Inc. 79 Milk Street, Boston, Mass. 02109
Current Inventory SALE All this Unit Record Equip- ment in stock and ready to ship at money saving sale or lease prices. RARELY OFFERED 046, 047, 059 Model 2, 407 A3, 548, 557, 087, 088, 514, & 519 with Mark Sensing OTHER FINE MODELS 024, 026, 056, 071, 085, 402, 403, 514, 519, 523, 552, 607, 604, 621 D.P. Equipment *** Marking Corp. 1000 N. 10th St., Suite 200 Milwaukee, Wis. 53233 (414) 333-3333	360/50 (256K) 360/65 (524K or 768K) FOR LEASE Peripherals Available if Required and Attractive Rates for Short Term Agreements Call or Write: Don Galembe Data Systems. Martin Marietta Corp. Hampden Place Baltimore, Maryland 21204 (301) 823-1600 IBM SALE 024 - \$450; 026 - \$1450; 056 - \$450; 077 - \$850; 082 - \$950; 402 - \$2000; 403 - \$2000; 407 - \$6500; 514 - \$1000; 519 - \$2200; 523 - \$400; 632 - \$1000; 694/521 - \$750; 1316 One Pack \$95; 2516 One Pack - \$216; 654 - \$750; Durr Card-to-Tape - \$1200; 1401/1 - \$402 - \$11,000; 1440/18K - \$65,000; 2311 - \$11,000; 7090 - \$55,000; 1626/22 - \$10,000; 4450 - \$12,000; Cummins Conditioner - \$950.	SALE OR LEASE 026 keypunches - \$1250 Burroughs 360 semiautomatic accounting machine - model F 1307 orig. cost - \$8850 under full maint. perfect cond. - \$950 Systems Leasing Co. 11308 South Harlem Ave. Worth, Illinois 60462 (312) 448-5760	SACRIFICE! IBM 402 with multiplying device Still under IBM maintenance contract Available June 15, 1971 Serial Number 261397 Solved 100/150 20 control positions/ control boards and cabinet Machine has not had hard use Will sell for \$1,000 FOB our door West Jersey Telephone Co. (201) 475-2101 Ask for J.M. Stanger	FOR SALE 3 - 1311's 1 - 2841 • consistently maintained • currently in use • available immediately Price: \$35,000 Call or Write: W.P. Beach • Amas Aluminum Mill Products Inc. 1495 Columbia Ave., Riverside, Calif. 92507 (714) 683-0140
IBM 1440 FOR IMMEDIATE SALE 8K DISK SYSTEM CALL OR WRITE	ALL DATA CO. 105 Hinchey Willow Springs, Ill. 312 839-5164	FOR SALE IBM 2250 MOD 3 DISPLAY UNIT Call or Write Marvin R. VanDam COMPUTER HARDWARE CONSULTANTS & SERVICES, INC. 1609 Easton Road Warrington, Pa. 18976 Telephone: 215-343-1430	FOR SALE IBM 360/50 System Offered by Princeton University consisting of: 1 - IBM 2058 Central Processing Unit with 256 K Bytes of core storage and two selector channels. Serial No. 11247 1 - IBM 1852 Printer/Keyboard, Serial No. 31549 The equipment has been kept up- dated and is at current engineering change level; it has also been on continuous maintenance by IBM since its installation. The equipment will be available after August 1, 1971 and will be removed at buyers ex- pense. Interested buyers should sub- mit bids in writing to: Director of Purchases & Office Services P.O. Box 33 Princeton, New Jersey 08540 Attn: Mr. J. Morawski Phone: (609) 452-2403	FOR SALE TELETYPES ALL MODELS W/WO Couplers NEW - USED LEASE/PURCHASE PLAN Call or Write DATA AUTOMATION SERVICES 4688 Cohn Road, Dallas, Texas 75247 (214) 637-6576
WHEN YOU ARE BUYING SELLING LEASING SUB-LEASING CONSULT WITH US THAT'S OUR ONLY BUSINESS COMPUTER DISCOUNT CORP. 2206 E. DEVON AVE. OES PLAINES, ILL. 60018 (312) 287-3666	360/40 WANTED IPS wishes to purchase or lease 360/40. Will consider either CPU or complete system. Delivery 90-120 days. IPS INFORMATION PROCESSING SYSTEMS, INC. (201) 871-4200 467 Sylvan Avenue Englewood Cliffs, N.J. 07632	FOR SALE IBM 360/40 FOR SALE 256K 1400 Emulation 2 Selector Channels Decimal Arithmetic Storage Protection Available August 70% of original IBM price Call: (212) 964-4000 H. Buonocore	FOR SALE CALCOMP 728 Plotter (Calibrated Model) 8/8 2019, Elec. 8/8 90017 CALCOMP 780 Mag Tape Unit 7 1/2, S/N 2068 7180 Optical Writing System 10114-101 Strippable Film Cutter System (Carbide) Calma Model 485 Duplifier System Contact: Efficient Leasing Corp. 2480 Linnane Ave. Fort Lee, New Jersey 07024 (201) 461-6600 Dick Leiser	
For Sale Make Offer SMC - CDC Typetronic 7816 2 Paper Tape Readers 1 Paper Tape Reader/Punch Printer (218) 981-1557 Gresham Data Systems, Inc. Cleveland, Ohio	WE BUY NEW USED DEC COMPUTERS PDP 8I, PDP 8L, PDP 8E Contact: Dr. Edsmann, or Willis Wolf ESI 301 Professional Center 244 Piedmont Blvd. Baton Rouge, Louisiana 70806 (504) 348-1441	FOR SALE 20300 - \$18,000 5 - 2401 - \$2 - \$15,900 2804 - 1 - \$26,800 192K - 256K - 40 Core - \$80,000 128K - 256K - 40 Core - \$134,000 1403 N1, 2540-1, 2821-1 - \$97,500 1401 Competency - 2040 - \$14,790 To Purchase 32K 300 2030F CPU's COMPUTER FINANCIAL, INC. John Derrick 1432 Altac St., Anaheim, Calif. 92805 (714) 776-8571	FOR THE BEST BUY IN 360's Dial (312) 295-2030 That's Frank Sylvestre's number at TLW's Midwest Office: TLW COMPUTER INCORPORATED 222 East Wisconsin Avenue NORTBROOK, Lake Forest, Illinois 60045	
WANTED IBM 360's ALL MODELS AND COMPONENTS Prompt replies to your offerings. Call collect or write: gsm	FOR SALE OR LEASE 1401 C4 system; 1410 systems, 40 and 80K; 1403; 1407; 7090 and 7094 systems; 7350 Drive; 729-V Drives; and Teletape Drives which are IBM 729-V and 729-VI compatible. Immediate availability. THE HALSEY CORPORATION 1367 Central Avenue Middletown, Ohio 45042 (513) 424-1697	AVAILABLE FOR LEASE BY OWNER 32 or 65K 360/30 CPU-1401 Comput. Disk Storage Drives Storage Control Units Magnetic Tape Units 7-Track or 9-Track with Simult. R/W Tape Control Units Disk Packs 1 Year Agreements Immediate Delivery On continuous IBM maintenance. Completely re- furnished - like new. Owner pays transportation and in- stallation. Customer pays maintenance. Write CW Box 3394 80 Austin Street Newtonville, Mass. 02160 NO BROKERS PLEASE		

BUY SELL SWAP	TIME FOR SALE	TIME FOR SALE	SOFTWARE FOR SALE	SOFTWARE FOR SALE
WANT TO BUY 16K MOD 30 CPU With 1061 & 1062 Console 2 MIC Machine Acceptable CW Box 3395 60 Austin St. Newtonville, Mass. 02160	360/370 COMPUTER TIME AVAILABLE 378/166 612K, 231K, 4 2311's & 6481's m/s, & 8482's m/ O/S or DOS or Compset. Weekdays 6180/m, 6120/m Weekends 6110/m, 600/m 12 hr. b/c, weekend 6100/m, 600/m 26/640 2650, 2314, 4 2311's & 2481's m/s (800-1608) Weekdays 600/m, 605/m Weekends 645/m, 635/m (8) 248/28's 80th 84K, disk and tape Weekdays 660/m, 642/m Weekends 630/m, 627/m The 370/185 is 100% compatible with the 360 and is 18 times faster than the 360/85. For further information call RON ELLIS 922-6141 Computer Research Company 141 West Jackson Chicago, Illinois 60604	MASSACHUSETTS AVAILABLE TIME 360/40 192K 2311/2314 DOS POWER MACRO SERVICES CORPORATION Our business is understanding yours! 131 TREMONT ST. BOSTON 017-423-6250	MONEY SAVINGS COMPUTER SOFTWARES WHY RE-INVENT WHEELS? It's a big headache and a tremendous expense save you money & time! COBOL Complete for IBM to 360/295 Tape in disk drives MIS Consolidated Financial Control Systems Western & COBOL, hardware, software, IBM, Vent ture, variable compensation, Describes current ac tions, teaching, support, contract sales, etc. in de tail COBOL BATCH SOFTWARE SYSTEMS General Ledger (Multi division) Payroll (Multi division) Payroll: Remittance Billing Inventory C.A.I. Computer Assisted Instruction Software For any personal, Western or Eastern with a coding MINI or dedicated Computer Accounting Package Time sharing or Batch / Fullsize on COBOL Modules include: Remittance, Billing, Inventory Payroll, Payroll Payroll, Labor, Labor Distribution & Job Cost, General Ledger, Financial Statements and Budget Management Data Base History between 1/2 Cost in Batch, P.A.S. 1/1 HOSPITAL MIS Patient Billing through IBM & General Ledger INVESTMENT PROPERTY Income analysis program ABBREVIATED COBOL MNEMONIC Conversion to COBOL Standards PULMACS DOS/286 only, Source Program Libraries with up to date Random Utilities Contact us for a FREE trial offer! SCIENCE AND COMPUTING, INC. P.O. Box 837, Welles, Ca. 94096 (415) 666-1266 (24 hour)	PAYROLL PAYROLL PAYROLL PAYROLL IS OUR ONLY BUSINESS PAYROLL PAYROLL PAYROLL PAYROLL IBM 360 OS/DOS RCA, HONEYWELL BURROUGHS AUTOMATED INFORMATION SYSTEMS, INC.
FOR SALE 1401-F4 C.P.U. - 8K 1402-1 Card Read Punch 1406-2 Disk Storage 1406-1 Core Storage 1407-1 Console Station \$14,500 (616) 948-0281	NEW JERSEY 360/50 OS-MVT \$81/hour Delivery Available Call Ray Albert - 609/462-7877 NYC: 431-8027 PHILA: 923-3441 FTSS, Inc. U.S. Hwy No. 1 Princeton, N.J.	Why Fight Traffic! • 15 Min. to Rt. 126 • 5 Min. to Mass. Pike • Jct. Rt. 495 & Rt. 9 • On-Street Parking 360/40: \$100-\$80 per hr. 182K, DOS, OS/MFT, 7 Tape, 4 Disk, 1 Printer 360/50: \$150-\$125 per hr. 512K, OS/MVT, 8 Tape 8 Disk, 2 Printers 2nd & 3rd Shifts & Weekends Call Bill King (617) 366-0011 Ext. 2468 - 8 AM-4 PM Special Rates Negotiable	ACCOUNTS PAYABLE A modular, multi-level system ap plicable to a wide variety of users. Full general ledger tie-in capabilities. Well written, easily maintained COBOL. We implement, test and guarantee for 90 days. COMM-SCI SYSTEMS CORP. 785 Market Street San Francisco, Calif. 94103 (415) 392-5378	DOS USERS Fully Integrated Enhancements For Your System SET - System Evaluation Technique, Job Accounting and Full Performance Measurement DCF - Dashboard Chained Fetch An Improved Program Retrieval Method for Savings up to 6% DRD - Dashboard Dynamic Priorities Performance Measurement, Feed back, For Run Time Allocation, dashboard computer leasing 4849 N. Scott Street Schiller Park, Illinois 60176 (312) 671-4410
Why should both of us Rent a computer from IBM? Share our 360/30 and cut costs! Call: R. Koondel (213) 937-1731	COMPUTER TIME AVAILABLE 360/50 393K \$115 an hour downtown area 3rd shift and weekends large blocks only Call: A. Depert (212) 964-4300 Ex. 330	Software for Sale • General Ledger System • Accounts Payable System Management responsibility re porting. Multiple company pro cessing. Chart of accounts in independence. Installed in 5 days. ANCOM SYSTEMS (213) 649-1616 8929 S. Sepulveda Blvd. Los Angeles, CA 90045	PRO-TEST II • Test Data Generation- Selection • File Conversion - Correction - Reformat • Date Analysis - Edit - Sampling • Select - Copy - List 80 USERS Nationwide - Industrywide • Banking - Insurance • Education - Computer Mfg. • Aerospace - Retailing • Publishing - Chemicals • Utilities - Apparel Synergetics Provides at No Extra Cost: Installation, On-Site Training, Support, User Aide For Technical and Pricing Information: Synergetics Corporation 1 Garfield Circle Burlington, Mass. 01824 617-272-3450	DECIBLE III DECISION TABLE PROCESSOR • FULLY OPTIMIZED • LIBRARY CAPABILITIES • EASY TO USE • COBOL/PL/I/FORTRAN INDEPENDENCE COMPUTING AND SOFTWARE CORP. 235 WHITE HORSE PIKE W. COLLINGSWOOD NJ 08107 TEL. 609-954-8924
ILLINOIS H-115 32K S TAPE & DISK BEST VALUE CONTRACT RATES AVAILABLE REAL-COM CORPORATION 32 North State Street Chicago, Illinois 60602 (312) 641-3117	COMPUTER TIME AVAILABLE NORTH JERSEY & WESTCHESTER IBM 5/360-20 IBM 5/360-25 IBM 5/360-30 IBM 5/360-40 1287 SCANNER TIME ALSO AVAILABLE OFF LINE PRINTING (ALL FONTS) EXCELLENT PRICES TIME AVAILABLE ON ALL SHIFTS SPECIAL RATES FOR W/E TIME Call: L. NELSON OR JANCE MURPHY 201-471-4300	*ACCOUNTS PAYABLE *GENERAL LEDGER *ACCOUNTS RECEIVABLE *JOB COST *INVENTORY MANAGEMENT SYSTEM *GROSS REQUIREMENTS PLANNING 5/360 - 25 AND UP ALL INSTALLED WE CUSTOMIZE, MAINTAIN WE IMPLEMENT, GUARANTEE MANUFACTURING MANAGEMENT SCIENCES, INC. 279 CAMERIDGE ST. BURLINGTON, MASS. CALL BOSTON 617-272-2970 NEW YORK 212-986-2816 CHICAGO 312-325-2102 HARTFORD 203-233-8603 ATLANTA 404-258-0039 LOS ANGELES 213-331-4724	ACCOUNTS PAYABLE UFS BOSTON LOS ANGELES CHICAGO NEW ORLEANS AND HARTFORD	ADVERTISE IN COMPUTERWORLD
360/65 768K OS - MVT - HASP ACCESS BY TERMINALS AND BLOCK TIME AVAILABLE CHICAGO C. W. SCHMIDT (312) 346-7300 "TIME ALSO AVAILABLE ON 360/20 86K TAPE AND DISK"				

CI Notes

'No-Shows' at Boston Show

BOSTON—Several of the firms that held back from exhibiting at the Spring Joint Computer Conference showed up here last week for the 49th International Conference of the Insurance Accounting and Statistical Association.

Among the "no-shows" at the SJCC that were here were IBM and Honeywell, as well as Spyr and Entrex, indicating a reliance on vertical, industry-oriented trade shows as opposed to the horizontal shows for the DP industry.

According to Paul Landry, newly promoted vice-president of marketing for Entrex, the show was "extremely worthwhile" and the audience was composed largely of vice-presidents and controllers—"the ones who sign the check for equipment, not the DP managers."

Maine Market Seen Doubling

PORTLAND, Maine—The value and number of computers installed in Maine is expected to about double by the end of 1972, according to William H. Potter, branch manager of Honeywell Information Systems.

By the end of next year the value of installed computer equipment should reach \$36 million, up from the present estimated \$17 million. "We anticipate anywhere from 325 to 350 computers will be installed or ordered at the close of 1972," he said.

OTB System Delivered

NEW YORK—Computer Sciences Corp. delivered its computerized off-track betting system to the New York City Off-Track Betting Corp. last week. The system has been designed to accommodate up to one million bets a day at approximately 1,000 betting windows as the Off-Track Betting Corp. expands its operations.

The Off-Track Betting Corp.'s engineering department is now conducting its own acceptance testing to satisfy their requirements.

Supershorts

General Computer Systems, Inc., a Dallas-based manufacturer of keypunch tape data entry systems, said it has booked orders worth \$4.95 million with two foreign distributors. The orders were for 44 of its System 2100 systems. Deliveries are scheduled through April 1974. The orders are through, Datanamics, Ltd., Sidney, Australia, and Datsapac Ltd., Hong Kong.

Adapso has released its recommended "Uniform Accounting System for the Data Processing Services Industry." The 33-page handbook is priced at \$20 per copy from Adapso, 561 Fifth Ave., New York, N.Y., 10017.

Time-Sharing Terminals, Inc. delivered its 4,000th terminal during the week of May 10.

Bridge Data Products, Inc. and Varian Data Machines have negotiated a contract whereby Bridge will furnish card readers for Varian's line of computer systems.

NCR Third, Study Says

Burroughs, IBM Tie for Customer Loyalty

NEWTON, Mass.—The name of the game in the computer industry is protecting one's own customer base while trying to poach on the base of users of competitive equipment, and customer loyalty plays a major factor in "holding one's own."

In the battle over present and prospective customers a recent study by International Data Corp. shows that Burroughs and IBM are tied for the lead in terms of customer loyalty with 80% apiece, according to *EDP Industry Report*.

As the publication notes, however, the 80% loyalty rating given to IBM in the 1960s is an erosion from the 93% loyalty rating given to the firm in a past study done in 1966.

When users were asked to project their loyalty to the mainframe manufacturers into the future (1971 and beyond), the study finds that there will be little erosion of the loyalty to IBM and in fact a 1% rise in customer loyalty, which is "proof that IBM indeed has renewed its marketing vigor," according to the study.

NCR, Honeywell

Besides IBM and Burroughs, two other firms had relatively loyal customers in 1970, the study shows. NCR came in third in the contest with a 77% loyalty rating and Honeywell was not far behind with a 73% rating.

The other mainframe makers did not fare so well during the 1970 period, with RCA showing a rating of only 48% and Control Data and Univac tied at only 43%. CDC and RCA, however, had offsetting competitive gains of 114% and 33% respectively during the period, the study shows.

An analysis by IDC of the individual models involved in the survey shows that competition in the lower end of the product line is the main reason for the drop in loyalty to IBM. The users of second generation 1401s and 7000s, often customer-owned, and the relatively unsupported 360/20, showed the least loyalty to the manufacturer.

On the other hand, users of 360 equipment can be considered more loyal to the giant, with 84% of these users loyal,

compared to only 70% of the users of older equipment. For the period starting in 1971, the study reports that only 38% of the second generation users plan to remain in the fold, whereas 90% of the third generation users plan to stick with IBM for upgrading.

At the same time, the *EDP/IR* report says: "This is an area where IBM can stem much of the tide if it desires, and indications are that it desires. It looks as if the 360/22 and the enhanced System/3 are moves in this direction, especially since a significant number of 360/20 users—45% of those for 1971—are moving 'up' to System/3."

Among the other mainframe firms, it appears that NCR's was the most successful in taking customers away from other manufacturers with an 86% gain from other manufacturers at the expense of IBM, according to the survey. Burrough's competitive gain of 44% was the third highest in the industry.

RCA strategy seems aimed at the part of the market where IBM has the highest loyalty, according to IDC—the 30, 40 and 50 users. Because of this, only 57% of the sites gained by RCA in 1970 were at the expense of IBM, the study reports.

The study finds the highest loyalty rates in the financial and medical area and a low loyalty rate among the Federal Government agencies, one of IBM's weakest areas.

Microfilm Growth, Services Stability Seen by Two Association Heads

WASHINGTON, D.C.—Expansion was the word of the day when two association presidents spoke to industry groups last week, with emphasis on stability in the service bureau industry and education in the microfilm field.

Speaking here, John R. Robertson, president of the National Microfilm Association, forecast a growth in the microfilm industry spurred by advances in COM and in the educational fields.

Robertson also called on professionals outside the field to exchange information with the practitioners in the field.

"Software and programming specialists, for example, can learn much from NMA and we can learn much from them," he said, adding "interdisciplinary studies between the NMA and businessmen, educators, data processing professionals and students can only be mutually beneficial."

Speaking in Boston, Bernard Goldstein, president of Association of Data Processing Service Organizations, expressed op-

timism for the recovery and stabilization of the computer services industry.

He said that the crisis had passed in the business "not because of an improving economy—our industry's offerings sell well in a down economy. But because the unqualified have had their day at bat and are now out of the blemish; unable to render since their equally unqualified financiers are no longer willing to back any and all who wrap themselves in the mantle 'computer.'"

He said that the crisis had passed in the business "not because of an improving economy—our industry's offerings sell well in a down economy. But because the unqualified have had their day at bat and are now out of the blemish; unable to render since their equally unqualified financiers are no longer willing to back any and all who wrap themselves in the mantle 'computer.'"

Monolithic Claims 'First Non-Volatile' Semiconductor RAM

SUNNYVALE, Calif.—What is called the "first non-volatile" random access semiconductor memory has been introduced by Monolithic Memories. The MM6510 is a 256-bit bipolar RAM.

With the system, if power drops anywhere between 5V and 2V, the memory information is guaranteed intact. If there is a complete 5V power failure, the memory will hold the information for 10 msec, the firm said.

The new memory consumes 6 μ W/bit in the power down standby mode and .9 mW/bit at operational level. Two D-cell batteries can be used for standby power to sustain a whole memory plane.

Power consumption of the MM6510 is controlled by an addressing technique via the enable line which activates the 6510 from the standby to the operational level. Therefore, the measure of its speed/performance is that of the enable access time which is 70 nsec typical, the firm claimed.

Priced at \$27 in quantity, the system uses silicon-controlled elements rather than conventional flip-flop cell design. Epitaxial resistors which give high ohmic values are used in the design to provide barrier diode technology to achieve fast access speeds, the firm added. PNP-NPN circuitry is used to provide low address fan-in currents of 160 μ A in the standby mode (1/100 μ A TTL load).

Two Firms May Follow CSI in IBM Suit

CHICAGO, Ill.—Two firms may file suits similar to the antitrust action by Computer Synectics Inc. (CSI) against IBM over the policy which makes IBM's measurement system available to users at no charge.

Under the new policy, the measurement package is to be used as a marketing support tool in proposal situations and CSI has filed a \$15 million antitrust suit charging that the new policy restricts fair competition and is a monopolistic practice [CW, May 26].

Booker A. Babcock, which introduced a line of "B measurement engines" at the SJCC, said that there is a possibility it may join CSI in the suit. A spokesman said that the firm has discussed the matter with CSI and that it agrees with the CSI action.

"We are very much concerned," he said. "It seems to be an effort on the part of IBM to prevent the user from free and open evaluation of measurement. We be-

lieve it is something that is very damaging to the interests of the industry. The only way that it would not be unreasonably competitive was if they were to use it strictly in competitive proposals."

Cornell, which recently acquired CPA, a firm that markets a line of measurement systems called Dynaprobe, also expressed concern. Fred Brer, president of Cornell, said the firm is taking a "wait and see" attitude.

"If IBM implements the policy as written, we do not see a problem as it is restricted to marketing situations. The question is how IBM's field force implements this policy. If it is detrimental to our marketing effort, we will have to look into it further."

There also expressed the opinion that he believed users would tend to look to other suppliers as they could question the objectivity of IBM in evaluating its own equipment, particularly as it must be used by IBM people and the user gets only an IBM-prepared summary report.

'Objective' Projections

Specialist Sees Mainframes Only Bright Spot for '71

NEW YORK — Except for the mainframe manufacturers the 1971 outlook in the computer industry is not encouraging, according to Jack Lukin, computer industry specialist for Burnham and Co., an investment banking firm.

Mainframe manufacturers, which capture over 60% of user

expenditures, saw declines in domestic shipments in 1970, Lukin said, due to the convergence of several "transitory developments or forces," including the general economic slowdown, users waiting to see the new machines from IBM, unbundling, and slowdown of government spending in the defense and

aerospace industries.

Even though "bullish statements by manufacturers and/or professional observers of the scene can be self-serving," Lukin stated that the projections of a 17% annual growth rate for the mainframe manufacturers through 1975 "are objective."

He said that about 13% of that growth would be from firms that presently use computers as they upgrade, especially into more communications-oriented applications.

Possible areas of concern in the future, Lukin said, include "the trend towards progressively less 'efficient' use of computer equipment. . . . An analogy can be drawn between future use of computers and existing use of telephone equipment. While most of the latter equipment is now utilized for only a fraction of the day, few would argue that this is inefficient or that the demand for telephone equipment is about to shrink."

Despite the downturn in general economic conditions in 1970, demand for minicomputers remained extremely strong and shipments rose 80% to 85%. But dollar shipments increased only 25% to \$525 million, he said.

Minicomputer central processing units and memories experienced very significant price declines, reflecting increased competitive pressures and lower production costs attributable to technological improvements and higher production rates, but marketing and other overhead costs did not decline commensurately and profit margins came under pressure, he de-

clared. It appears that a similar trend will continue in 1971, and though prices may decline at a slightly slower rate, profit margins will continue to be under pressure. Summing up, the minicomputer submarket tends to be far less stable than the general purpose mainframe area, he

added.

The performance of the software and professional services submarket has been extremely disappointing, Lukin said. In light of the decline of user efforts to implement new applications as the resulting softening in demand for programmers and systems analysts, those still gainfully employed are proving to be far more flexible and productive than in recent years, he continued.

Industry predictions of 1970 and 1971 growth rates therefore, have been reduced from 10% and 50% respectively to 15% and 3% respectively.

The independent peripheral market is proving to be a mixed bag of tricks, Lukin stated. By and large, markets for other than IBM plug-to-plug compatible equipment are overcrowded by producers who entered these markets believing widely held market projections must have subsequently proved to be widely optimistic.

Multipurpose Aerospace Computer Shown by Kearfott at Paris Show

PARIS — A special-purpose computer for such aerospace applications as multisensor navigation, recon data processing and command and control was introduced at the Paris Air Show by the Kearfott Division of Singer-General Precision, Inc. here last week.

The system, with a 16K by 32-bit memory, is a variation of the firm's SKC-2000 series and features a single data and control bus interconnecting all modules

to a standard interface. Other features include asynchronous module operation and expandable sandwich construction.

A simplex version of the system using standard 1.9 jusec memory can perform 320,000 add type operation/sec, while a 1 jusec memory using LSI can perform 470,000 operation/sec. Substituting a solid-state read-only memory and an LSI scratchpad module increases the figure to 530,000 operation/sec.

EDP PROFESSIONALS:

Q. Why can't Aetna Life & Casualty use a single 3601/65?

A. Because we need at least four Mod 65's (with O/S - MVT) and a Mod 67 to keep up with the work load now. Along with six 3601/30's plus all kinds of direct access, I/O and telecommunications gear.

If you have programming or analysis experience, it's worth your while to find out what Aetna has to offer in its Hartford headquarters. Send your resume to M. C. Ciccone, Personnel Dept., Aetna Life & Casualty, Hartford, Conn. 06115. An equal opportunity employer and a JOBS-participating company.



Viatron System 21 Finds New Life in UK Market

CW European Bureau

LONDON — The Viatron System 21 lives in the UK where it is being marketed as a data capture and a data preparation device by Lamson-Viatron Ltd. Currently the company is selling American-made units but claims it has enough know-how from Viatron and from its own experience to be in production within one year, which is expected to be before current supplies of the System 21 dry up. All other Viatron operations in

Europe have now ceased. Lamson-Viatron is a wholly owned subsidiary of Lamson-Industries, whose main business is in business forms and copying products but which also sells the accounting machine product of the RUF Organization alongside its own Summa office products and Anita calculators.

Lamson's turnover in 1970 was \$146.4 million of which \$43.2 million was in office machinery. Over the past few years Lamson has extensively widened its product range from its original paper-based business.

The System 21 is priced in the UK at around \$4,800 for a basic input unit and \$4,032 for the spooling unit, and \$840 for the data transmission facility.

These prices are extremely competitive by UK standards, and, backed by an aggressive marketing force, the Viatron system is attracting considerable attention. It will, however, be under pressure from firms such as Mchawk Data, Computer Machinery, Consolidated Computer — and Inforex who, with the mainframe makers, have captured the first round of business.

PortaCom. One for the road.

Our PortaCom traveling data terminal goes anywhere you go. All packed in a lightweight attaché case. Just plug it into any standard electrical outlet (it's UL approved), place an ordinary telephone headset into its built-in acoustic coupler and contact your computer on PortaCom's tele-

type-compatible alphanumeric keyboard. Get your answer on a full-page, letter-size printout, with up to three carbons. PortaCom, one of the small wonders of the computer age. And so is its price.

Our detailed brochure will tell you all about it. Write for it now.



PortaCom is the only portable terminal on the USA list.



DATA PRODUCTS PortaCom

800-222-2222, Telegon Corporation, Division 45, 45 Commercial Mid, Stamford, Conn. 06402 (203) 325-4181

FOR SALE

OWNER WISHES TO
SELL 65K MODEL
30 (2.0 jusec)

FEATURES:
DECIMAL ARITHMETIC
1ST SELECTOR CHANNEL
1051 ATTACHMENT
STORAGE PROTECTION
INTERVAL TIMER

FOR INFORMATION
CONTACT:

MEMBERS MUTUAL INS. CO.

ATTN: LARRY SAMPLE
P.O. BOX 22127
DALLAS, TX 75222
PHONE 214-387-5441

Fairchild Completes Deliveries Of LSI Memories for Illiac IV

MOUNTAIN VIEW, Calif. — Deliveries of the main memory system for the Illiac IV computer have been completed by Fairchild Camera and Instrument Corp. here.

The LSI memories have been delivered to Burroughs Corp. test facilities in Paoli, Pa., where they are undergoing tests with the complete system scheduled for installation in early 1972 at Nasa's Ames Research Center.

In all, 70 Processing Element Memories (PEMs), containing 131,072 bits each, have been shipped to Burroughs since deliveries of the memory elements started in April 1970. The Illiac IV will have a capacity of 8,388,608 bits when utilizing its 64 processing elements simultane-

ously, according to Rex Rice, director of Fairchild's memory systems operations. The memory is based on Fairchild's 4100 memory elements, which are 256-bit bipolar LSI's, and possesses a 200 nsec full operation cycle time.

Each of the memories delivered consists of four memory boards and one control board, packaged in frame using a can-operated lock which applies pressure to the board edge connectors. Input/output in the system is through two large printed circuit boards which include mother board interconnection, Fairchild said.

The LSI memory in the system is equal in cost to high-speed core memories but is approximately three times faster, according to Rice.

Guides Urged for Multinational Growth

LIEGE, Belgium — New guidelines should be established to aid and direct the orderly growth of multinational organizations in the 1970s, Robert W. Sarnoff, RCA chairman, said at the dedication of a new solid-state components plant here last week.

Sarnoff predicted that the growth of European-controlled multinational organizations in the U.S. during the 1970s would approach the rate of American industrial growth on the continent during the 1960s.

Because of this rapid expansion, he called on all governments, "whatever their political coloration, to cooperate in setting ground rules for the orderly advance of multinationalism," and suggested that an existing international body, such as the Organization for Economic Cooperation and Development, should take the initiative to establish the

new guidelines.

"The timing is appropriate," he said. "Communications have become global. Technology is now universal in application and effect. Universal organization and management of the world's technological resources should logically follow."

'Irreversible Drive'

Multinational business is "the spearhead of an irreversible drive toward a true world economy," Sarnoff said, adding: "It seeks the most efficient use of resources on a global scale. It encourages economic integration, generates new capital resources, and fosters the spread of useful technology and management know-how."

The new ground rules for international corporations should be "designed to create a climate of continuity and consistency for business everywhere," Sarnoff said.

POSSIBLE ONLY AT EPG

NEW YORK'S LARGEST.
FASTEST GROWING
COMPUTER UTILITY

RJE or Remote Batch

IBM 360/65
\$125 per hour

SMF Price Schedule Also Available
ANYTIME day or night, 7 days a week.
Per 100K region.

CONFIGURATION IBM 360/65 1024K

4 2314 Direct Access Storage Devices
8 2401MS 9 Track Tape Drives, Dual Density
8 2420 9 Track Tape Drives
3 2401MS 7 Track Tape Drives
3 2311 Disk Drives
3 1403S1 High Speed Printers
2 2540 Card/Punches
1 2703 Communications Controller
OS MVT — HASP — RJE

- Convenient Location
- Free Systems Programming Support
- Excellent Turnaround Time
- Free Operators
- Remote Job Entry
- Free Work Space
- 24 Hour Delivery Service

CONTACT: Ted Sebarose, Vice President

E.P.G. Computer Services, Inc. (212) 486-9000 / Night: (212) 486-9576

345 Park Avenue (at 51st Street) New York, N.Y. 10022

Convenient to all NYC transportation / Parking facilities within our building

All it takes
is three connections
to add our memory
to your 360.

**Modular programming
"bugging" you?
Try testing with
TESTMASTER.**

Modular programming is a great concept. And a great way to test your code. But it can be a real pain in the neck when you're stuck in a debugging loop. That's why you need TESTMASTER.

TESTMASTER is a modular programming testing system that lets you test your code as you write it. It's the only system that lets you test your code as you write it. It's the only system that lets you test your code as you write it.

TESTMASTER is a modular programming testing system that lets you test your code as you write it. It's the only system that lets you test your code as you write it. It's the only system that lets you test your code as you write it.

hoskyns



Please send more information on TESTMASTER.

Name/Position _____
Company _____
Street Address _____
City/State/Zip/Telephone _____

HOSKYN'S SYSTEMS RESEARCH, INC. 964 Third Avenue, New York, N.Y. 10022 (212) 686-4520

360/CORE



COMPUTERWORLD

financial

Memorex \$2.3 Million Loss Laid to Accounting Rules

SANTA CLARA, Calif. — Still dogged by accounting procedures that forced it to account for \$23 million of sales on a deferral basis, Memorex Corp. has reported a first quarter loss of \$2.3 million on sales of \$20.9 million.

A year ago, Memorex had a profit of \$2 million and sales of \$22.6 million.

Because of accounting rules, Memorex could not include the sales of peripherals to independent leasing Corp., a company formed by Memorex to market the equipment. Sales to ILC go on Memorex's books over a 48-month period, the expected payout life of the equipment.

The company was also hurt by "unsatisfactory results" in the supplies segment of its business. According to the company, weak customer demand for tapes, disks and other supplies, as well as "heightened competitive pressures upon prices" forced cutbacks in the media group.

Peripherals produced "satisfactory results in both marketing and manufacturing operations." Orders and backlog apparently are both at planned levels.

The first quarter loss is equivalent to 59 cents a share; the 1970 figure was a profit of 53 cents a share.

Not all the loss was due to

deferral accounting. Memorex said that there had been a "substantial increase of equipment-for-lease which remained Memorex-owned," and Memorex kept about 40% of all the leased peripherals it made during the quarter.

At the end of the quarter, sales value of "equipment-for-lease" owned by Memorex and ILC stood at \$86 million.

The results for ILC alone showed a \$20,000 income on sales of \$3.5 million.

The Memorex results exclude \$22.3 million billed to ILC and \$15.4 million of costs associated with those ILC sales. Adding the last two figures to the Memorex results would give a profit of \$5.3 million, which Memorex might have made in the quarter if it could post the ILC transactions as straight sales. Memorex's pre-tax loss, however, was \$4.6 million, and the \$2.3 million loss figure includes a \$2.3 million tax credit.

The firm intends to create another company, like ILC to handle foreign leasing, Memorex President Laurence L. Spitters told a shareholders meeting.

It will be "half the size of Memorex's domestic affiliate," Spitters said. He also predicted that the parent company will not show a profit until the fourth quarter.

Second Quarter

HP Sales, Earnings Fall

PALO ALTO, Calif. — Hewlett-Packard Co. has reported sales and earnings for the second quarter below the corresponding period of 1970, but showed some improvement over this year's first quarter.

Sales for the second quarter ended April 30 totaled \$90.3 million, compared with \$91.7 million for the corresponding quarter of 1970. Net earnings amounted to \$5.3 million, equal to 21 cents a share. This compares with earnings of \$6.1 million, equal to 24 cents a share, during last year's second quarter.

In making quarterly comparisons for the current fiscal year, President William R. Hewlett noted that second-quarter sales were up 11% over the first quarter, and earnings were up 9%. On a per-share basis, earnings rose

from 19 cents to 21 cents.

Income orders during the second quarter totaled \$94 million, a gain of 8% over the previous quarter. For the six-month period, ended April 30, orders amounted to \$181.5 million, up 4% over a year ago.

Sales for the six months totaled \$171.5 million down slightly from \$174 million for the first half of 1970. Net earnings amounted to \$10.2 million, equal to 40 cents a share. This compares with earnings of \$11.7 million, equal to 46 cents a share, during last year's first half.

Hewlett said the pattern of incoming orders during the second quarter reflected "a shift in the relative strengths of our domestic and international markets."

L-T Loses \$5.1 Million for Year

NEW YORK — Levin-Townsend Computer Corp., has reported that in the fiscal year ended March 31 gross revenues totaled \$45.8 million. Income from continuing operations before taxes, minority interests and extraordinary items amounted to \$3.6 million.

Income after taxes, but before extraordinary items, was \$1.7 million, or 53 cents per share. An extraordinary net loss of \$6.9 million, or \$2.06 per share, was incurred which resulted in a net loss of \$5.1 million or \$1.53 per share, for the year.

To the prior fiscal year, the company incurred a net loss of \$28.8 million, or \$8.70 per

share, including a net extraordinary loss of \$26.3 million, or \$7.95 per share.

The net extraordinary loss, after tax effect and minority interests, for the fiscal year ended March 31, 1971, was principally due to:

- Net loss incurred on the sale of subsidiary companies totaling \$1.7 million.

- A provision for estimated termination costs of discontinued operations amounting to \$3.8 million.

- Net losses of discontinued operations from the date the decision to dispose was made to the date of sale, equal to \$2 million. In addition, the extraordinary net loss includes a gain on the repurchase of the company's debentures of \$640,820.

The losses in both fiscal 1971 and 1970 relate to the non-computer leasing activities in which the company had invested.

Honeywell Foresees Disappointing 1st Half

SAN FRANCISCO — Honeywell President Stephen F. Keating has predicted to securities analysts that his company's first half results will be "disappointing."

The president claimed, though, that they will not be "a good indicator of how the year will turn out." "We think improvement will become apparent in the second half," he added.

Keating claimed the 50% drop in Honeywell earnings in the first quarter showed "an abnormal situation." He said that while business is not now booming, "we have seen the unmistakable signs that we are on the verge of a boom."

Nickels & Dimes

While C-System maker Collins Radio failed to attract TRW as a possible merger partner, talks are now going on with North American Rockwell, the aerospace and auto parts biggie. At the end of last January Collins turned in a \$3 million loss on \$147 million revenues. Both parties are tight-lipped, but directors of each company, as well as Collins shareholders, would have to approve a merger.

\$\$\$

Meet you in Chapter 11 department: Foto-Mem, after years of trying to file for and market a laser memory that would put the Library of Congress into a six-foot cube, is seeking the cozy arms of the bankruptcy act. The old officers are out, and George H. Milby is the new company head. The petition listed assets of \$236,300 and liabilities of just about \$4 million. Largest debt is a \$2.3 million debenture issue, on which Foto-Mem is in default.

\$\$\$

Chapter 11 department, West Coast branch: After three creditors filed an involuntary petition of bankruptcy, CTC Computer swallowed the pill and filed itself for Chapter 11. The Century City, Calif., firm did not list assets and liabilities pending an audit. CTC had reported recently a preliminary net loss of \$1.7 million on sales of \$5.3 million. Year-earlier figures showed a net loss of \$1.1 million on total revenues of \$3.7 million. Estimated first quarter loss is \$465,000, including an extraordinary item of \$216,000.

\$\$\$

In an interview, George Cogar, president of Cogar Corp., which has just laid off about half its work force, said the reason for the slash was failure of OEM orders. The peripheral and mini maker had counted on sales to keep cash flow healthy. When the orders didn't come in, Cogar cut the payroll before reserves were drained. There is still a skeleton staff waiting to resume production of the Cogar 4.

\$\$\$

Intel has filed to register a \$30 million issue of convertible subordinated debentures due 1996. The proceeds are primarily intended to support rental programs of peripheral equipment, especially ISS disk drives. The offering is being managed, indirectly, by duPont Clora Farman.

HAPPINESS IS A THING CALLED \$

We give you happiness, service — immediate action. Let me sub-lease you tonight and be happy tomorrow.

Buy

Sell

Lease

360 Systems

NVC Computer Sales

Suite 408, Benjamin Franklin Pavilion, Jenkintown, Pa. 19046
Write or call collect (215) 887-5404

MALE **ON**
FEMALE **1Y**

We teach complex subject matter that can be learned at all levels

EDUTRONICS multi-media instructional systems teach computer subjects in structured presentations that can be grasped at all management and operating levels.

Organized modules of audio-visual materials — such as animated and live-action films, videotaped lectures, workbooks, tests — work to fill gaps of understanding quickly.

Learning time is compressed by a factor of ten. The payoffs are in increased job performance and reduced costs. And they can be measured.

EDUTRONICS procedural guidelines help you structure curriculum, course outlines, course content. Our courses are modular so they can be fitted into your program where, when, and how you desire.

Hundreds of Fortune's "500" firms use the EDUTRONICS system in their programs.

For information about EDUTRONICS courses, INFORMATION SYSTEMS, COMPUTER CONCEPTS, DATA BASE ORGANIZATION, COMPUTER LANGUAGES, PROGRAMMING, DATA PROCESSING, BUSINESS SKILLS, OS-360 OVERVIEW, OS-360 JOB CONTROL LANGUAGE, OS-360 TECHNIQUES AND AIDS, OS-360 UTILITIES, OS-360 CORE DUMPS, etc., please call or write: Edutronics Systems International Inc., 3345 Wilshire Boulevard, Los Angeles, California 90010, (213) 380-7811.

edutronics
systems international, inc.

Computerworld Stock Trading Summary

All statistics
compiled, computed
and formatted by
TRACE-SCOTT, INC.
Cambridge, Mass. 02138

CLOSING PRICES THURSDAY, MAY 27, 1971

PRICE- RANGE (11)												PRICE- RANGE (11)										VARIFAB Three Months Ended March 31													
1971 RANGE (11)						CLOSE MAY 27 1971						1971 RANGE (11)						CLOSE MAY 27 1971						1971 RANGE (11)						1971 RANGE (11)					
SOFTWARE & EDP SERVICES												SOFTWARE & EDP SERVICES												SOFTWARE & EDP SERVICES											
O ADVANCED COMP TECH						1-1 1/8 1 3/8						N SH COMPART						96-117 114						Snr Ernd						1971					
A APPLIED DATA RES.						1-1 1/8 1 3/8						O MOORE BUS. FORMS						37-42 38 1/2						Revenue						421,795 350,739					
O APPLIED LOGIC						1-1 1/8 1 3/8						N NASHUA CORP						29-38 33 1/2						Loss						113,400 113,400					
O ARIS						1-2 1 1/4 1 1/4						O REYNOLDS & REYNOL						37-52 42 1/2						WESTERN UNION INT'L						Three Months Ended March 31					
N AUTOMATIC DATA PROC						1-2 1 1/4 1 1/4						O STANDARD REGISTER						18-25 21 1/4						Snr Ernd						8,445 8,445					
O AUTO SCIENCES						1-2 1 1/4 1 1/4						O TAP PRODUCTS CO						15-25 30 3/8						Revenue						14,863,000 13,256,000					
O BROTHER DATA SYS						1-2 1 1/4 1 1/4						N UNICOR						10-10 7 1/2						Earnings						1,297,000 1,260,000					
O BRANSON APPLIED STS						1-1 1 1/4 1 1/4						N MALLACE BUS FORMS						18-26 21 1/2						COMPUTER TASK GROUP						Three Months Ended March 31					
O COMPUTER AGE INDUS.						1-2 1 1/4 1 1/4						N OURDOROS CORP						105-138 130 1/2						1971						Snr Ernd					
O COMPUTER DIVISION						1-2 1 1/4 1 1/4						N COLLINS RATIO						12-20 18 1/4						Revenue						327,835 263,711					
O COMPUTER INDUS.						1-2 1 1/4 1 1/4						N CONTROL DATA CORP						88-93 91						Snr Ernd						88,141 84,141					
O COMPUTER NETWORK						1-2 1 1/4 1 1/4						O DATA GENERAL CORP						15-17 17						Revenue						1,480,000 1,480,000					
O COMPUTER PROPERTY						8-11 7 1/2						N DIGITAL EQUIPMENT						55-83 81						Credit						68,141 34,141					
N COMPUTER SCIENCES						9-17 14 3/8						N ELECTRONIC ASSOC.						5-9 7 1/2						Includes						93,000 retained					
O COMPUTER TASK GROUP						1-2 1 1/4 1 1/4						A ELECTRONIC ENGINEER.						25-35 32 1/2						Time sharing and tax reduction of						\$26,340 from carryforward of prior					
O COMPUTER USAGE						10-10 9 1/8						N FORNARD						12-20 18						equivalent shares.											
O COMP AUTHORITY REPORTS						9-13 9						O GENERAL AUTOMATION						92-104 110 1/4						BANISTER CENTRAL						Year Ended December 31					
A COMPUTING & SOFTWARE						27-45 38 1/2						N HENLETT-PACKARD CO						30-35 33 1/4						1971						Snr Ernd					
O COMSESS						4-6 3 1/2						N ION						310-364 334						Revenue						8,449 8,449					
O COMSHARE						8-8 8						O INTERDATA INC						8-11 9 1/8						Revenue						25,005,000 12,005,000					
O CONSUL. ANAL. CENT.						1-2 1 1/4 1 1/4						N NCR						38-48 47 1/2						Earnings						1,253,000 1,005,000					
O DATA AUTOMATION						1-2 1 1/4 1 1/4						N REA						38-48 47 1/2						Based on common and common						equivalent shares.					
O DATA PROCESSING						7-10 7 1/2						N RAYTHEON CO						27-40 37 1/4						ADDRESSGRAPH-MULTIGRAPH						Three Months Ended April 30					
O DATA PACKAGING						7-10 7 1/2						O SCI. CONTROL CORP						1-2 1 1/8						1971						Snr Ernd					
O DATATION SERVICE						1-3 1						N SPERRY RAN						35-38 35 1/4						Revenue						8,446 8,446					
L DATATAP						1-1 1 1/4 1 1/4						A SYSTEMS ENG. LABS						11-18 18						Revenue						110,004,000 109,088,000					
O DIOSTEK						7-10 12 1/2						N VARIAN ASSOCIATES						12-17 17						Revenue						3,720,000 3,669,000					
O EDP RESOURCES						7-10 12 1/2						N WANG LABS.						26-30 30 1/4						Revenue						304,766 307,703					
N ELECT COMP PROD						7-10 12 1/2						N XEROX CORP						105-115 105 1/2						Earnings						5,719,000 11,133,000					
N ELECTRONIC DATA STS.						9-15 15 1/4						LEASING COMPANIES																							

Why buy a hardware monitor?

When you can invest in Systems Measurement with COMRESS.

COMRESS DOES SELL HARDWARE MONITORS. When a purchase makes economic sense for you—our clients. But each purchase contract contains a guaranteed trade-in provision in the event your monitoring needs change.

We have both the product line and the contractual arrangements to provide you with the monitoring capability you need . . . when you need it . . . and at the lowest possible cost.

Here are a few of the ways the return on your investment in systems measurement is insured with COMRESS:

- **USER ORIENTED CONTRACT OPTIONS.** Purchase, short-, and long-term leases. Interruptible leases. Lease purchase options with all leases. Trade-in provisions with all purchases.
- **FULL RANGE OF MONITORING SYSTEMS.** From the low-cost, six-counter 7700 System, to the sixty-four-counter, multiplexed 7800 System.
- **APPLICATIONS SUPPORT.** Versatile data reduction software. Formal training program. Comprehensive probe point library. Special applications development, such as memory mapping.
- **FIELD SUPPORT.** Applications analysts available in eight branch locations.
- **HARDWARE SUPPORT.** Total in-house design, manufacturing and servicing. Responsive hardware customizing capability.

Call your nearest COMRESS office for an analysis of your monitoring needs.

CHICAGO

O'Hare Office Building
10400 West Higgins Road
Rosemont, Illinois 60018
(312) 298-4180

DETROIT

20100 Civic Center Drive
Southfield, Michigan 48076
(313) 356-7171

LOS ANGELES

9841 Airport Boulevard
Los Angeles, California 90045
(213) 641-8171

NEW YORK

1250 Broadway, 20th Floor
New York, New York 10031
(212) 736-7707

PHILADELPHIA

Two Decker Square
Bala Cynwyd, Pennsylvania 19004
(215) 667-1065

PITTSBURGH

One Oliver Plaza
Pittsburgh, Pennsylvania 15222
(412) 391-8270

SAN FRANCISCO

One California Street
San Francisco, California 94111
(415) 421-7701

WASHINGTON, D.C.

Two Research Court
Rockville, Maryland 20850
(301) 948-8000

LONDON

Alliance House
29/30 High Holborn
London, W.C. 1, England
01-405 0085/7



COMRESS

HEADQUARTERS: TWO RESEARCH COURT, ROCKVILLE, MARYLAND 20850, TELEPHONE: (301) 948-8000